

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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Daily Price List, issued at 5 P.M., giving latest Quotations up to close of day. Also, on the 1st of every month a List of all Securities currently dealt in, with the Mining and Stock Exchanges, with latest prices, current dividends, and interest yielded at market price, &c., and every Friday a general List containing closing prices of the week.

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20 Javali, 7s. 9d.	15 Richmond, 4s. 16s. 3d.
20 Lanes Chemical, 47½	10 Roman Grav., 48½
20 Leadhills, 45½, x d.	20 St. Harmon, 22½
20 Llanrwst, 43.	20 S. Condurow, 48½
15 Ladywell, 21s. 3d.	25 Tankerville, 45 3s. 9d.
20 Llan Gw., 43½	50 Van Consois, 10s.
20 Marke Valley, 17s.	20 W. Tankerville, 17s.
10 Miners, 41½	8 W. Wye Val., 42½
15 N. Quebrada, 42 8s. 9d.	10 West Chiverton, 41½
20 North Laxey, 13s. 9d.	15 Wheel Newton
20 Pateley Bridge, 42.	50 York Peninsula, 5s.
100 Pestana, 4s.	10 Wye Valley, 42½
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Amstetou	1	1 1/2	Minera	417	419
Boddrids	35	37	North Laxey	13s. 1/2	14s.
Carn Brea	35	37	New Quebrada	2 1/2	2 1/2
Chicago	35	37	New Zealand Kapanga	1	1 1/2
Chontales	35	37	Parys Mountain	9s.	10s.
Derwent	1 1/2	2	Pateley Bridge	2	2 1/2
Devon Great Consols	3	3 1/2	Richmond	5 1/2	5 1/2
Dolcoath	34	36	Roman Gravel	8 1/2	9s.
Don Pedro	9s.	10s.	Rookhope	20s.	22s. 6d.
Eberhardt	4 1/2	5 1/2	San Pedro	20s.	22s. 6d.
East Caradon	5s.	7s. 6d.	South Condurow	7 1/2	7 1/2
East Van	3	3 1/2	Tankerville	5	5 1/2
Exchequer Gold	4s.	5s.	Tincroft	14 1/2	15 1/2
Flagstaff	2	2 1/2	Van	30	32
Frontino	3	3 1/2	Van Consols	7s. 6d.	10s.
Glenroy	15s.	20s.	West Chiverton	14	15
Glyn	7s. 6d.	10s.	West Pateley Bridge	1	1 1/2
Gorsedd and Merilyn	6	6 1/2	West Godolphin	2	2 1/2
Great Laxey	20	21	West Tankerville	15s.	17s.
Javali	5s.	7s. 6d.	West Wye Valley	2 1/2	3
Last Chance	2 1/2	1	W. Grenville	3 1/2	3 1/2
Ladywell	17s. 6d.	20s.	Wheel Kitty	1 1/2	2
Llanrwst	2 1/2	3	Wye Valley	2 1/2	3
Leadhills	5	5 1/2			

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200 GLENROY	do	25 ROMAN GRAVELS	do
200 GREAT LAXEY	do	50 RED ROCK	do
100 GREAT WEST VAN	do	15 ST. HARMON	do
50 GREAT HOLWAY	do	50 SOUTH CONDUROW	do
20 GROSWINING	do	100 TALLYBONT	do
30 LEADHILLS	do	25 TANKERVILLE	do
120 LLANRWST	do	5 VAN	do
50 MONYDD GORDDU	do	60 VAN CONSOIS	do
100 MEDLYN MOOR	do	50 WEST TANKERVILLE	do
200 NORTH LAXEY	do	25 WEST WYE VALLEY	do
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BY J. CLARK JEFFERSON, A.R.S.M., W.E. SC.,
Certificated Mining Engineer.

(Formerly Student at the Royal Bergakademie, Clausthal).

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SECTION III.

BLASTING MATERIALS.

To Prof. Abel is due the present perfection in the mode of manufacturing guncotton. In consequence of the fibrous, or tubular, nature of the cotton as first used, and the capillary attraction which held the acid in the cotton, the greatest difficulty was experienced in getting rid of the whole of the free acid by washing in the ordinary manner. Instead of using ordinary cotton, or spun long fibrous cotton, he employs machinery (cotton) waste, which must be quite clean, and of a loose texture, so that the acid can easily penetrate it and saturate it. If the cotton be in a fibrous condition each fibre is practically a long narrow tube, sometimes twisted and doubled up, and it is at once evident how slowly the acid will penetrate, and how great is the expenditure of time to afterwards wash out the remaining traces of acid. The conversion into guncotton, or tri-nitro-cellulose, takes place in the following manner. The cotton, after being carefully dried, is dipped in small quantities at a time into a perfectly cold mixture of 1 part of nitric acid, of specific gravity 1.5, and 3 parts of sulphuric acid, of specific gravity 1.85, and is left for 24 hours in 10 times its weight of this acid mixture, in order that the conversion shall be rendered as complete as possible. The vessel in which the conversion takes place is kept closed, and at as cool a temperature as possible. At the end of this time the cotton is taken out and placed in a centrifugal apparatus, by which means the excess of acid was removed. The guncotton is then dipped into a large quantity of water by a simple mechanical arrangement, in order as quickly as possible to dilute any acid which may remain, by which any heating and consequent active oxidising effects of the nitric acid on the guncotton is avoided, an action which even during a short time exercises a deleterious influence on the quality and stability of this product. This precaution is one of the striking improvements in Prof. Abel's method of procedure. After this preliminary washing the guncotton is placed in a centrifugal apparatus, and the washing and rotation in the apparatus is twice repeated. It is next placed in a hollander (such as are used for making the pulp in paper manufacture), by which it is brought into a state of fine division, which is necessary for its later conversion into a homogeneous and compact mass, and by which also a more thorough cleansing is effected. In the next operation the guncotton is poached—that is it is placed and well stirred in a large quantity of warm water, which is from time to time renewed. This washing is continued uninterruptedly, until on a careful examination the guncotton is found perfectly clean, and lasts about 48 hours. By this method of washing any hard adhesive impurities are removed, which formerly, even after weeks of washing in a stream of fresh water, and a later boiling in a dilute alkali, might still remain. After this washing the pulpy mass, made into suitable shapes, is placed under a hydraulic press, and formed into compact solid cylindrical or other shaped pieces. As will be observed, during the whole of the manufacture the guncotton is kept in a wet condition, and consequently inoperative. After the compression the product is placed on warm plates, freely exposed to the air, and after drying is packed in light wooden boxes. The guncotton produced by this method distinguishes itself by its compactness, uniformity, stability, and safety. Guncotton which has been stored in boxes for 12 years has been found after that time to be unchanged: under certain circumstances it appears to undergo spontaneous combustion. It has been shown by extensive experiments that guncotton, even when not enclosed in a confined space or compressed (that is in the open air), can be brought to explosion by means of a sharp blow or a fulminate. Its effect is at least equal to that of nitroglycerine or dynamite, and more than ten times that of ordinary gunpowder. According to Lauer, of Vienna, however, the effect of guncotton only approaches that of dynamite when the explosion is caused by a percussion fuse. From what we have previously said it will be evident that the power of guncotton depends, like other explosives, on the conditions under which it is burnt or exploded, the gases resulting from combustion. If it is ignited in the open air, or in the ordinary packing cases used for it, it burns quietly away, and must be enclosed in a strong confined case, in order when ignited by a flame to cause explosion; but if it is subjected to percussion, or the detonation of fulminating mercury, &c., in open air, a violent and destructive explosion ensues. On explosion guncotton is almost entirely converted into gas, only about 1 per cent. remaining behind as solid matter. The following analysis by Lieut. Karolyi shows the composition of the gases resulting on the explosion:—Carbonic oxide, 29.97; carbonic acid, 33.86; marsh gas, 4.28; nitrogen, 13.16; water (and aqueous vapour), 16.87; carbon, 1.62; hydrogen, 0.24. This analysis hardly bears out the statement that the resulting gases are less injurious to the miner than those resulting from the explosion of dynamite. The large quantity of carbonic oxide produced would tell with a very disadvantageous effect on the miners in the badly ventilated workings of a metalliferous mine.

For igniting guncotton the patent fuse devised by Nobel for dynamite is also used. Soon after Schönbein's discovery it was endeavoured to increase the efficacy of guncotton by mixing nitrates or chlorates with it. As our readers will notice from the analysis given of the gases resulting from the explosion, the combustion in a confined space is incomplete, and in order to convert the whole of the carbon into carbonic acid, and not a mixture of carbonic acid, oxide, and marsh gas, the latter two being both combustible gases, it was intended by the addition of nitrates or chlorates to supply sufficient oxygen for the complete combustion of the carbon. For this purpose the guncotton was steeped in a saturated solution of potassium nitrate or chlorate, and the moisture afterwards evaporated. The amount of saltpetre absorbed when the cotton was in the fibrous state was found to be quite insignificant; but better results when the cotton was in a pulpy condition. The saltpetre is powdered, and a concentrated solution is thus made, in which the guncotton is steeped. The guncotton thus prepared is granulated and compressed. The advantages of this method of preparing guncotton are stated to be that it is harder, leaves no dust, the crystallisation of the salt renders the guncotton more stable.

In consequence of the refusal of the railway companies to carry guncotton experiments have been made in this country to test the dangers attendant on its transport, from which it appears that guncotton when packed in loose cases on ignition burns with a great amount of flame, but no explosion takes place. Such boxes have been attached to the rails, and a coal wagon has been passed over them, some of them being ignited and others not, but in no case did an explosion occur. When a locomotive passed over them they all ignited, and burnt without explosion. Guncotton was attached to the tyre of a wagon wheel, and the wagon was run along the rails, when an explosion occurred every time, but extended only to that portion which came between the tyre and rails, the other portion burning quietly away. The temperature at which guncotton explodes has been determined by Von Ebnor as 136° centigrade; according to others the heat must be greater. When washed in a solution of soda the explosive point has been determined as 180°.

According to Bleikrode, in "Der Naturforscher," Berlin, when guncotton is covered with a light inflammable fluid, as carbonic disulphide, ether, alcohol, &c., it does not explode on the passage of the electric spark, or by other means of ignition, but burns quietly away; as that he proposes that to protect guncotton during storage from fire, &c., it should be covered with a light layer of such a fluid which might easily be evaporated off when the guncotton is required for use. Punshon proposes to coat the guncotton

with powdered sugar, potash, or similar salts, and thus isolate the separate parts of the guncotton from each other; and by apportioning the amount of these salts to prepare guncotton of any desired strength, so as to suit to various requirements. He claims for it a uniformity in composition and strength, and that it can be stored without liability to decomposition.

A peculiar use of guncotton in blasting is that of inserting it between the ends of the wires of the ignition cap, when firing several shots simultaneously by electricity, with the use of guncotton in the ignition cap a greater number of holes can be fired simultaneously than when fine powder is used in the cap for igniting the charge. Guncotton, however, being much more sensitive as regards dampness, there is a greater liability to misfire.

In order to adapt guncotton better for and to give less liability to danger in handling when blasting in mines, it has been prepared as a paper by Prentice. Gun paper is the name of a material that has been manufactured in Germany, and according to trials which have been made with it it is said to have given very satisfactory results. It is manufactured by saturating paper (by leaving it for about an hour) in a solution having the following composition:—9 per cent. of potassium chlorate, 4.5 saltpetre, 3.25 of ferrocyanide of potassium, 3.25 of powdered charcoal, 0.5 of starch, 0.6 of potassium chromate, 80 per cent. of water. The mixture itself is perfectly harmless, and the saturated paper, even in the dry condition, cannot be exploded by a shock or blow, or by any temperature below that of ignition. Whilst the paper is moist it is made into rolls, and then cut into suitable sizes for cartridges, which are afterwards dried in a water bath at 100° centigrade. In order to protect them from moisture they are rubbed over with a solution of xyloidine in acetic acid. (On dissolving starch in nitric acid, and then diluting with water, a white substance, xyloidine, is precipitated.)

LOADING AND FIRING.

For convenience we shall consider separately the loading, the tamping, and the firing.

LOADING.—The ordinary manner of loading is to pour in the powder until it fills a certain depth in the hole. If the hole be nearly vertical the powder will fall pretty clear to the bottom, but if the inclination be not very steep the powder will require pushing down to the bottom. This is often done by careless miners with an iron scraper, though the use of a wooden ramrod ought to be made imperative. If the hole is horizontal, or nearly so, a scoop must be used. When the hole inclines upwards a cartridge becomes necessary. This method of charging a hole by pouring in the powder in a loose condition is decidedly to be reprehended, as there will always be a liability (and no small one either) of some of the powder clinging to the sides of the bore hole, notwithstanding the use of the scraper or ramrod to push it down to the bottom; and to render the blasting operation safe, the powder should always be deposited clear to the bottom of the hole.

This may be accomplished in two ways, by the use of copper cylindrical tubes of proper length (to reach to the bottom of the hole), and of suitable diameter. By means of a funnel inserted at the top end of the tube the powder may be lodged clear to the bottom of any hole. If the hole be horizontal, or nearly so, the powder can be pushed forward by means of a wooden stick or ramrod. The powder is enclosed in cartridges, which are usually made by taking sized paper, and rolling it round a cartridge stick of the proper diameter, and fastening it along its length and at the bottom either with paste or pitch, the other end being left open for the reception of the powder. For wet bore holes the cartridge must be made water tight by coating it with wax, pitch, linseed oil, &c. Instead of paper a linen bag may be used for wet bore holes by dipping it into boiling pitch, &c., or the cartridge may be made of leather or gutta-percha. Combes recommends a mixture of eight parts of pitch, one of bees wax, and one of tallow, for covering the cartridge. If the bore hole is under water tin or sheet iron may be used. Of course if the bore hole is wet or under water a water tight fuse will also be required, which should be firmly and in a water tight manner attached to the cartridge. The powder is generally poured in with the hand, but as this gives no check on the amount of powder used, so that no proper rule is or can be adopted for the charge, it is advisable to use a proper measure. A great saving might be effected in powder in mines if more attention were paid to adjusting the charges, though this is capable of being done in only an approximate manner, which would, however, be vastly better than the rule of thumb, or more correctly speaking guess work, which is almost predominant in this department of mining. Sir J. Burgoyne recommends the keeping of a set of marked copper measures that will contain, when just full, 1 lb., 4 ozs., and 1 oz. of powder respectively. Ch-nalles uses a cylindrical copper tube containing a lead piston, with a graduated piston rod, in order to measure out charges of powder, the piston being pushed further in or out according to the quantity required. This is one of those refinements which may be referred to in books, but which are so seldom carried out in practice. When filled the open end of the cartridge is pressed down, so that no powder will fall out. In the case of wet bore holes the end will be tied up after the introduction of the fuse.

In order to effect a saving of powder M. Kleritz proposes to use a solid cast-steel cylinder, of which the upper and lower ends are nearly the same diameter as the bore hole, the greater part of the cylinder, however, is turned down to a smaller diameter, so that an annular or ring space is left in which the powder is inserted. Through the centre of the cylinder a touch hole is drilled, and two side ones from it communicate with the powder in the annular space. The cylinder is placed in the cartridge, and the annular space is filled with powder, which contains one-third, or at most one-half, the quantity of powder which otherwise would fill the cartridge, and thus he proposes to save 66 per cent., or at least 50 per cent. in powder. The fallacy of the patentee consists in considering that only the original tension of the gases immediately on explosion, and before the rock gives way to allow of any expansion, is of importance in blasting. The original tension will certainly be the same; but, with only a small fissure produced in the immediate neighbourhood of the charge, the expansive force in this case would be so greatly reduced (to one-half or one-third) that the charge would be quite insufficient to completely loosen the rock. This would occur especially in very yielding rocks, such as chalk, coal, &c. Experiments which were made in the Königs Mine, in Upper Silesia, under the direction of the inventor, Kleritz, did not indicate any saving in the amount of powder. The effect in loosening the coal was not sufficiently great, simply because the charge did not contain sufficient powder.

At Gibraltar the blasting of the hard limestone is carried on systematically on the principle of using to the utmost the expansive force of the gases, and thus obtaining from the powder the greatest effects possible, as the engineer for the sake of economy allows his high-pressure steam to expand in the cylinder. The holes are usually bored with 2½ in. jumpers to about a depth of 9 ft., and then loaded with 4 lbs. of powder. The effect of the explosion is simply to shake the rock below and produce a few slight fissures without completely loosening it. The needle is cleared out, and the hole again filled with powder, when it will perhaps take from 8 lbs. to 12 lbs., and is fired again; a third and even a fourth charge with from 18 lbs. to 30 lbs. of powder is fired in the same manner till the rock is very greatly separated, and rents to the extent of 20 ft. to 30 ft. in different directions. The amount of powder to be used under various circumstances will be best treated of when describing the carrying out of the blasting operations.

PERMANENT TRAMWAYS.—An improved method of supporting and fixing the rails of tramways, whether intended for horse or steam power, has been invented by Mr. A. H. ROWAN, of Southampton Buildings, and has for its object the dispensing with the costly and inconvenient wooden or other sleepers and spikes or fastenings at present employed for supporting and securing the rails. According to this invention he supports and fixes the rail (which is rolled with a longitudinal web on its under side) by the aid of transverse metal bars driven through openings made at convenient intervals in the web, such bars being made to extend sufficiently far beyond

each side of the web to enter the supporting blocks (whether of stone or concrete) on each side of the rail, such blocks forming a portion of the ordinary street paving. These supporting blocks are made in two parts—that is to say, divided longitudinally, so that one part may act as a tightening key to the other parts, thereby firmly holding down the rail. All or any portion of the supporting bars will be permanently secured by lead or concrete in the stone blocks after they have been tightened up at convenient intervals the bars may be employed by simply extending the same in the manner described for the track, and the supporting bars laterally, a bevel being formed transversely at the bottom of the opening in the web. The space underneath the rail and between the two contiguous rows of paving blocks is filled up with concrete, cement, sand, or other suitable material as to embed the under portion of the rail and the several supporting tie bars. The stone or other paving blocks should be laid on any well known firm foundation, and special provision may be made if found requisite, for drainage underneath the embedding material.

NATIONAL ASSOCIATION OF COLLIERY MANAGERS.

The second meeting convened for the purpose of forming a National Association of Certificated Colliery Managers was held at the Wick Hotel, Manchester, on Saturday. At the previous meeting, held at Leeds, the programme for the future of the Association was sketched out, the same as that which appeared in the Journal. The time fixed for the meeting was half past two, but after waiting upwards of an hour a telegram was received from Mr. Warburton and Mr. Rothery, of Leeds, who has also taken a prominent part in the movement, stating that they deeply regret that they would be unable to be present. Mr. E. Defty, of Rothery, formerly of the Wombwell Main Colliery, near Barnsley, was called upon to preside.

The CHAIRMAN, in opening the proceedings, alluded to the objects in the programme, some of which he considered could well be carried out. It was proposed that there should be a fund and distinct funds for widows and those dependent on members disabled arising from accidents; a superannuation or retirement fund; and a subsidy fund for general purposes, such as temporary suspension, &c. Now, he could not see how all these separate funds could be carried out in a satisfactory and successful manner, that the machinery would have to be of an extensive and complex character. He was of opinion that it would be better to have a fund for all purposes, and which could be easily worked, having several. With respect to the education of the sons of colliery managers, he thought there would not be much difficulty about for he found that in Leeds there was a college with science in geology, mining, engineering, &c., and there was very little but what similar classes would be organised in other places. matter, however, could be left to the association for after consideration. With respect to the subscriptions, it would be for the time being to say whether it should be one guinea a year or a guinea entrance fee.

Mr. NORTON said it was left for decision at the first meeting whether the subscriptions should be for the whole of the year. One of the objects it was then stated was the insurance of the lives of the members, seeing that in ordinary insurance companies those connected with collieries had to pay a much higher premium than those belonging to other trades. Were that carried out it would be obliged to have assessment tables, for a man (say) would, of course, have to pay less than a man of 50.

The CHAIRMAN said that it would be found the easier the better way for all members to pay the same, as by so doing applications would be avoided.

Mr. WARDELL remarked that at the first meeting the suggestion was made that there should be certain specific objects to which some of the whole or whole a member could belong, but nothing further done.—Mr. NORTON said it was proposed that a scale was arranged with respect to such objects, but the opening fee was to be the same to all.

The CHAIRMAN, in reply to the remarks made, said it was present meeting to decide whether there should be so many different funds or not. He considered that an insurance fund could be successfully carried out, as it would lead to a great amount of publicity, whilst simplicity was the thing to be desired for carrying the business of such an association.

Mr. WARDELL thought they should let the association be formed first, and then when their numbers had increased, and their large body of members, the question as to the various objects then be discussed. This, in fact, being what he might really the first meeting of the association, it would be well to let matters as had been alluded to stand over.

Mr. WHALLEY was also of opinion that it would be better if the association formed first before they entered into details, the first thing to be done was to get the names of those who would become members, and then the necessary business could follow.

Mr. PHILLIPS, with a view to practical operations, said the necessity for a combination of colliery managers had been almost all hands, and he had, therefore, great pleasure in proposing those present form themselves into an association, to be called the National Association of Colliery Managers.

Mr. WARDELL seconded the resolution in a few remarks.

The CHAIRMAN said he considered there was no body of men required an association more than the colliery managers. He was owing to a want of cohesion they were considered fair game, shot at by anybody and everybody. There was also every reason that they were not held in that respect by persons of a certain rank that it might be expected they would be, and in proof of this would instance an advertisement taken from a mining paper, in which it was stated that a certificated colliery manager was required for a place at Belper, in Derbyshire, the salary for which appointment was not to exceed 10% a year. This he considered an insult to all colliery managers, as it would almost be to a good man in some districts.

Mr. S. BROOM said he had great pleasure in being present at the meeting, which he attended for the purpose of hearing what the objects of the proposed association. He considered that the association of colliery managers was much required, for there were many ways in which its influence might be felt. This was with respect to the Board of Examiners appointed for granting certificates of competency to colliery managers. He was a member of the board for one division of Lancashire, and he wished to see of his own class on it, for according to the Mines Regulation Act they were to have three.

The CHAIRMAN had no doubt that in the course of time the association was fully established, such matters would be looked after as they ought to have been.

After some discussion, it was agreed that officers should be appointed, so that the association should be considered fully pointed out for all practical purposes. Mr. E. Defty was then appointed President (pro tem.); Mr. Warburton (Manchester), treasurer; Mr. Walton, secretary. Those appointments will be subject to consideration, but it was understood that they should continue in force to the end of the year.

Those present then paid one guinea each as entrance fee, and the association may be said to have taken root, and with every promise of success. The secretary was empowered to issue circulars to different districts, calling the attention of the colliery managers to the establishment of the association. It was, however, considered desirable, in the first instance, to confine the issuing of the circulars within a tolerably easy distance of Manchester, the localities would include the West Riding of Yorkshire, Derbyshire, Leicester, Staffordshire, and Lancashire.

The CHAIRMAN remarked that it would be advisable that the names should be sent into different districts to make known the association.

* Being Notes on a Course of Lectures on Mining, delivered by Herr Berggrath, Dr. von Grottebeck, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

Contracts have been let this week for 400 coal trucks, partly iron and partly of wood, and divided into eight lots of 50 trucks each. The lowest offer was made by the Haine St. Pierre Forge Ironworks, and Foundries Company, and was 917. 13s. 6d. per truck.

The highest offer was that of the Dyle Workshops Company—92 1/2 lbs. per truck. The difference between the tenders was very slight, and prices would seem to have fallen to the lowest possible point. Replying to a deputation which waited on him a few days since, the Belgian Minister of Public Works said he hoped shortly to share some important orders for carriages among Belgian industrialists, but that one lot would be reserved to the German maker who might be found willing to accept the lowest price of the last adjudication. An important order for iron barracks has just been given out by the Russian Government, the contract being awarded to the Belgian Colliery and Metallurgical Company. These barracks are intended as winter quarters for Russian troops now at the seat of war. The barracks will cost 54. 8s. per man sheltered. The John Cockerill Company has also sold some boats built of plates to the Russian Government. Steel in the shape of debris, not intended for steel foundries and works, is to be admitted free into the German empire. The quantity of steel to be admitted free is to bear a due proportion to the productive force of the works for which it is imported. The exports from Belgium of rails and some other descriptions of iron are shown by an official return to have further declined in the first eight months of this year as compared with the corresponding period of 1873.

IMPROVED AUTOMATIC BUDDLE.

A novel arrangement for automatically discharging the pulp upon the inclined surface of the buddle, and at the same time delivering upon the inclined surface by the same automatic arrangement any number of moving uniformly directed jets or streams of water for washing the ore and carrying away the lighter portions, has been invented by Mr. JOSEPH RICHARDS, of Battle Mountain, Nevada. The bottom of the circular pan is inclined or convex. In the centre of the pan is a circular raised portion, the surface of which is inclined or descending from its centre to its outer edge. A timber extends across above the centre of the pan, and is supported by up-rights. A vertical shaft steps in the centre of the raised portion of the pan, while its upper end is secured in a suitable bearing in the cross timber. An upright cylinder surrounds the shaft, and is permanently secured to it, so that it will not rotate with the shaft. Outside the cylinder another of larger diameter, but shorter than the other cylinder, is secured, so that both cylinders will rotate with the shaft. Hollow arms extend outward horizontally from the inside cylinder. These arms pass through the outside cylinder, and extend to the centre rim of the pan, and are slightly curved in one direction. Short hollow arms project horizontally from the outside cylinder, and extend out to the outer rim of the raised portion. The outer ends of the tubular arms are closed, and a small hole is made on one side of the arms, above the outer rim of the raised portion, while a number of small holes are made along one side of the arms, above the enclosed surface of the pan, outside of the raised portion.

It will now be perceived that this combination of upright shaft and radiating arms form a compound Barker's mill, which will be rotated by the reaction of the water which escapes from the holes in the arms. In practice the pulp is delivered by a sluice trough or other means into the upper end of the outside cylinder, while clear water is delivered by a suitable spout into the inner cylinder. The water will then fill the arms and be delivered in a line of small streams through the holes upon the inclined surface of the pan. The reaction of this escaping water will cause the entire device to rotate in a direction opposite to that in which the streams are projected. At the same time the pulp is discharged through the holes in the arms upon the outer edge, or near it, of the raised platform, and flows down along the inclined bottom of the pan, where it is acted upon by the small jets or streams of water by which it is washed and the lighter portion separated.

This arrangement of the water jets forms what Mr. Richards calls a hydraulic brush, which is automatically caused to sweep over the surface of the pan on which the pulp is spread, and by its gentle washing action separates the particles and carries off the lighter portions down the incline without flowing or disturbing the body of pulp. This device is extremely simple and inexpensive, as the operation is continuous and automatic, the entire operation being maintained by the hydrostatic pressure in the inside cylinder.

Meetings of Public Companies.

GLENROY LEAD MINING COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, Austinfrans, yesterday—

Mr. J. Y. WATSON, F.G.S., in the chair,

Mr. MURCHISON having read the notice convening the meeting. The CHAIRMAN said they all knew that the principles of the operations of this mine had been in consequence of a theory of Capt. Rowe's that the lodes split up at the 25 fathoms, and that the principal part of the lode went off in a direction contrary to the shaft. Capt. Rowe had advised that a series of cross-cuts should be made to open out a mine worth 100,000. Soon after that theory was broached Capt. Rowe showed him a report from his locum tenens at the mine, which said that there was a grand rich lode, and at the same time gave him a sketch, saying he had cut into the lode at three places. Now, when he considered that Capt. Rowe had been the manager of the Great Laxey at one time, he looked on the mine as something beyond speculation, and became the largest shareholder in the concern. Out of this place they had got 8000 worth of ore, and although the lode still yielded ore, it was not such as they anticipated. Although he was disappointed, he was not disheartened. He remembered a lode of a mine in Devonshire some years ago which yielded ore, and became so poor that the directors decided to wind it up. A cry then arose to sink their shaft, and the manager did so, and in course of time they came into a course of ore which paid them for years. Their rich neighbour, the Great Laxey, made all their ore in depth, and he believed they could not fail to make ore in this mine. He would leave Capt. Rowe, who was present, to explain more fully the past workings and the operations to be pursued in the future.

Mr. WADDINGTON remarked that it had been stated positively that there was a place in this lode worth 800 per fathom in three different points, but in his opinion this valuation was much exaggerated. He quoted at some length from a report by Captain Barkel, jun., and concluded by expressing his want of confidence in Captain Rowe's management.

Captain Rowe, in replying, said he would try to avoid anything like the feeling which had animated Mr. Waddington. He would simply state, first, that there was no deception practised. This mine had been before him many years as part of the Great Laxey property, there being no division between, but only an imaginary line. He proposed the formation of a company to work the mine, and to realise what he believed would turn out to be a valuable property. He took an interest in it, and they commenced working in the most likely place. A little past the discoveries referred to there had been a lode which turned out well, but which had been neglected and the trials not completed. As soon as the Great Laxey Company manifested a desire to sell the property he reflected in his mind on that part of the mine. When they made the trials they suddenly came to a continuation, as he thought, of this last bunch of ore, and they cut in on the side into a new part, where he could see there was a side lode to a limited extent. The mine was then under water up nearly to that point, but as soon as they cut into this rich lode the result was that there was a great demand for the shares. He, however, kept his shares, which he thought the most conclusive proof of his belief of the value of the mine. With regard to cutting into the lode they had done so in three places, and he had looked at the lode at each place with his accompanying pitman, who had had 25 years experience of the Great Laxey. This man said, on being asked for his opinion, that he should judge the lode would turn out 3 tons of lead and 4 or 5 tons of blende per fathom, and his own calculation had given the same result, the result of which at the present prices would give a value

of 800 per fathom. Since the water was got out they had put in the cross-cut at the 40, and there they cut the continuation of the same thing going down, but much poorer. Of course he saw then that this was what would be termed a mere deposit of ore, and that instead of its being a new lode it was a division of the main lode going down on one side, and as such he reported it. Capt. Barkel, from whose report Mr. Waddington had quoted, after examining the mine, said they must have had a splendid lode, and agreed it would have turned out 3 tons of lead and 4 tons of blende per fathom. Their great care now should be to treat the mine as though it was a deep bearing mine, and the sinking of the shaft should be carried on to the 100 fm. level, and even further. He believed if they persevered and sunk the mine they would get into the large productive lode, and recover the lode they thought they had when they first started.

Mr. BYRON thought Mr. Waddington's remarks unfair, and expressed his confidence in Capt. Rowe.

Mr. KELLY said he came there angry with Capt. Rowe, but after what he heard he could not help saying he had fully justified his position, and he did not think Mr. Waddington, on reflection, would maintain what he had said.

The CHAIRMAN then read a telegram just received from the mine as follows:—"Lode in shaft is improving fast in character, now following 6 ft. wide, containing some nice sugary spar, mixed with a little blende; footwall 25 end south standing. From appearance of lode at present ought to be going with all possible force; lode in sole of 25 improved in sinking." (Hear, hear.)

After some discussion on the advisability of employing boring machinery, Mr. DAUKES (director) stated that the matter had already received the attention of the board. He had recently, in connection with the directors of another company in which he was interested, seen several drills in practical use, and thought they had found one which combined the requisite economy, simplicity, and speed.

The CHAIRMAN said the shareholders might rely on the board fully investigating the subject before coming to a decision. Eventually it was resolved to leave the matter in the hands of the directors.

The CHAIRMAN moved the adoption of the report and accounts, which was seconded by Mr. BYRON, and agreed to.

The auditor, Mr. Richard Mitchell, was re-elected, and a vote of thanks to the Chairman closed the proceedings.

WEST MOSTYN COAL AND IRON COMPANY.

On extraordinary meeting of shareholders was held at the City Terminus Hotel, Cannon-street, yesterday.

Colonel J. D. SHAKESPEAR in the chair.

Mr. J. DAVIS (the secretary) read the notice convening the meeting. The CHAIRMAN having read a letter apologising for the unavoidable absence of Mr. Peter Rylands, M.P. (a director), said the business for which the meeting had been called was to rescind a resolution passed on July 24, and to submit another proposal. At that meeting it was suggested that the 4390 deferred shares should be apportioned amongst the debenture holders, and the directors were so fully impressed with the idea that they had full power to do so; but it was found that some of the shareholders and the outside public seemed to have some doubt whether the directors really had power to dispose of these deferred shares free of liability. Acting under the advice of their solicitor the directors took counsel's opinion, which in the first case was to the effect that the shares could not be disposed of clear of liability. However, upon a second application to counsel, the decision given was that they could deal with the shares exactly how they liked; but as there had been some doubt in the case the directors discussed the point further, and it occurred to them that the 4390 shares might be disposed of without injury to the existing shareholders. It was, therefore, suggested that the shares should be cancelled altogether, and then came the question of raising the money, and it was decided that 10 per cent. debentures would be an easier and a simpler way of raising the money, and for the purpose of sanctioning such a proposal the meeting had been called. If the money were all received it would enable them to carry out the operations as originally intended, but if all the debentures were not subscribed for, an alternative scheme would be suggested. They had now a splendid shaft capable of raising 1000 tons a day if they could only get the coal to the bottom of the shaft. There was everything on the spot to raise between 300 or 400 tons a day, but they were precluded by Act of Parliament from raising the coal until there is a second ingress and egress shaft, and a second air-way; and the question arose whether instead of sinking a second shaft of the same class as the No. 1 shaft it would be practicable to sink a mere 6 ft. shaft to answer the purposes of communication, and an air-way. In another colliery with which he was connected this had been done, and the expenses would be considerably modified. Mr. Higson and himself had made two estimates of how the work might be done; but before saying definitely what the cost would be the ground would have to be thoroughly examined. He thought, however, that the days of exorbitant expenses in collieries had gone. He believed the whole thing could be done within 15 months, and that by that time the colliery would be returning from 300 to 400 tons a day, which, at the present price, would leave a profit of 1s. or 1s. 6d. per ton, or 5000 per annum. That amount would pay the debentures, and leave about 7 per cent. for distribution on the capital. This was a very practical scheme, and he thought it was worthy of the consideration of the shareholders. Having referred to the fact that many persons were waiting to snap up the property if the company could not carry it on, and stated his firm intention of retaining the property, the CHAIRMAN moved a resolution to the effect that the resolution passed on July 24 should be rescinded, and that in lieu thereof to issue first mortgage debentures to the amount of 40,000, bearing interest at the rate of 10 per cent. per annum.

Mr. J. O. BURTON (a director) seconded the motion, and in doing so said he thought the alternative scheme suggested by the Chairman a very feasible one, but he thought the security that the company had to offer was quite ample for the raising of the full amount of the 40,000, which would enable them to carry out their original intention of developing the property in a really legitimate manner. He was very glad the Chairman had expressed the views of the board as to their intention not to sacrifice the property, which was so exceptionally well situated that even now they could raise coal at a profit of 1s. to 1s. 6d. per ton. He thought 20 or 30 tons a year would be a small output if the colliery were in good working order, and 1s. per ton profit upon such an output would pay not only the interest on the debentures and on the deferred and preferred shares, but it would enable them to form a sinking fund for the redemption of the debentures, and a rise of 1s. per ton in coal, which must be expected soon, would give 20 per cent. interest after redeeming the debentures and paying the interest. If the shareholders did not support the directors they would have to go to the public, in which case the proprietors would act very unwisely, as they would give the plum to the outside shareholders, and keep the stone themselves. For his own part, he would certainly take his proportion of the debentures, and he hoped all the shareholders would do the same.

Mr. J. HIGSON (the manager) said with respect to the alternative scheme suggested by the Chairman, he (Mr. Higson) had not given the question sufficient time and attention to speak with certainty. No doubt if the diameter of the shafts were decreased, and they were not fitted up for winding purposes, the capital expense would be lessened to that extent, but to what extent it would be so lessened he was at present unable to state. There was no doubt that the necessity of the times had obliged them to retrench in various directions, but, as to the position of the shaft, he was decidedly of opinion that it should be placed along the present one, and he thought the size of the shaft being reduced to 6 feet would not be compensated for by the smaller cost of the work. The principal expenditure would be in the plant at the top, the stages for tipping the coal, and in communication with the railway and the River Dee. The shaft was now abandoned as regarded working operations.

The CHAIRMAN remarked that in 800 Wales in a colliery in which he was interested they had a 15 ft. shaft, and 170 yards to the north a little shaft, 6 ft. in diameter, which was their ventilating shaft, and from this they are raising 5000 tons a week. Of course the small shaft would only do for a small area.

Dr. MAXING said there could be no doubt that the plan submitted to the shareholders was the right one, and he could only regret that it was not proposed before. It was decidedly preferable in simplicity and in fairness to all parties to the scheme approved of at the previous meeting, and he hoped the directors would be well supported in their endeavours to promote the prosperity of the property.

The SECRETARY, in reply to Mr. HILL, said of the 1900 shares unsold in the possession of the company 500 had been allotted to Sir Piers Milnes in discharge of his claim, and there were now 1850 unsold.

Mr. RUSSELL EVANS believed that the scheme which they were about to cancel could have been carried out, and many of the shareholders had given their support to it; but the directors, rather than there should be any doubt, chose the scheme now submitted. In the case of a colliery in the neighbourhood of West Mostyn, the profit during the past year had exceeded 1s. per ton on the amount raised.

The SECRETARY remarked that not a single shareholder had withdrawn his money, but, on the other hand, nearly all of them had sent in their proxies.

On the motion of Mr. E. EVANS, seconded by Dr. MAXING, a vote of thanks was passed to the Chairman and directors, and the meeting separated.

[For remainder of Meetings see to-day's Supplement.]

WEST GODOLPHIN.—A fine 60-in. cylinder engine was started at this mine, on Thursday, by Mr. Bennetts, the engineer, in the presence of Capt. Pope, the manager, and several friends. For the past two or three winters there has been considerable difficulty in coping with the water; but this engine, with enlarged pitwork, which has been fixed to the bottom of the mine, will obviate this for a long time to come. This is one of the few mines that have opened up productively at the first working. The lode, which is a fine masterly one, was cut at a shallow level by the present

manager, and at each successive point continued to open out well. This is the important mining enterprise now in operation in this once prosperous district which it will, he doubts, be the means of again reviving. A little better price only wanted to make good dividends.

MINING IN AUSTRALASIA—MONTHLY SUMMARY.

NEW SOUTH WALES.—The output of coal from Newcastle for the month ending Aug. 17 amounted to 118,494 tons, of which 23,650 were shipped to Sydney, 1283 tons to the Clarence and Richmond rivers, 34,849 to Victoria, 7758 to South Australia, 13,508 to New Zealand, 1512 to Tasmania, 1702 to Queensland, 9746 to China, 274 to Mauritius, 14,335 to San Francisco, 2734 to Eastern ports, were taken by steamers, and 4256 were raised for home consumption.

At the Royal Society of New South Wales, Mr. W. A. Dixon, F.R.S., and Silver, and other Metals, from Pyrites." The idea of extracting upon the investigation of a subject of special value in a country as is disseminated over these colonies—a subject in the treatment of which difficulties were to be encountered, and much patience exhibited—according to Mr. Dixon, by Mr. Harrie Wood, Under Secretary for Mines, paper contributed by Mr. Dixon enters fully into a description of his experience with various pyrites, and gives ample details of the results. A sketch of the progress hitherto made in this branch of chemical investigation is given, and the paper is illustrated by a series of diagrams. Some useful diagrams are appended. Mr. Dixon concludes his paper by saying that he has been very much interested in the subject, and how to extract the gold, but also copper, silver, and antimony, all of which would be obtained and turned to account in getting the first, and it only to be seen whether the owners of such ores (pyrites) will render the process value to the colonies or not.

There has been great destruction of property at Wallend, owing to the in a pit.

The annual report of the Commissioner for Railways shows that at the year 1873 there was a total of 616 miles of railway open in New South Wales, and the total expenditure up to the same period was 8,570,000.

The fastest passage ever made from London to Melbourne is that of the tania, which arrived at the latter port on Aug. 8, doing the voyage in 40 days, event has created some stir among the advocates of the Cape mail route to the bourn.

NEW ZEALAND.—Mining operations on the Thames gold fields during the month have been on the whole satisfactory. The monthly yield was 6000 oz., or about 3000 oz. less than that of its predecessor. As the stone coaled, however, was only about one-half of the quantity put through batteries during the previous month, the percentage of gold obtainable is thus maintained. The annual parliamentary returns for the year 1873, as given in the Assembly indicate that the yield of gold has slightly fallen off on the Auckland and Otago gold fields, but that an increase has taken place on the West Coast Nelson diggings. The amount exported from the colony during the past year was about 100,000 ozs.

TASMANIA.—The richness of the West Tamar gold field is exciting considerable interest.—*Sydney Morning Herald*, Aug. 24.

FOREIGN MINES.

ST. JOHN DEL REY.—The directors have received the following letter from Morro Velho, dated Rio de Janeiro, Oct. 11: Produce for the month of September, 40,000 oia.—15,500; yield, 8.8 oia. per ton. All going on well.

DON PEDRO.—Captain Vivian, Sept. 4: Mine: The mine throughout the month has been on the whole satisfactory. The monthly yield was 6000 oz., or about 3000 oz. less than that of its predecessor. As the stone coaled, however, was only about one-half of the quantity put through batteries during the previous month, the percentage of gold obtainable is thus maintained. The annual parliamentary returns for the year 1873, as given in the Assembly indicate that the yield of gold has slightly fallen off on the Auckland and Otago gold fields, but that an increase has taken place on the West Coast Nelson diggings. The amount exported from the colony during the past year was about 100,000 ozs.

—Captain Vivian, Sept. 10: All works both in mine and at surface progressing very favourably, and excellent yield is being done.—Mine Captain dated Sept. 10: General Remarks: The ore raised has been derived from the No. 6 shoot, back of new level, No. 8 shoot, horizon of old level, and the general samples, there has been an improvement in the quality of the No. 8 Shoot: A stoppage has been recently opened out on a pillar at Alice's West, ore from the same has been of moderate quality. In the eastern stoppage, No. 8 shoot, horizon of old level, the ground has been changeable, but, on the branches of lode have been better both in size and quality. The No. 8 shoot, back of new level, No. 8 shoot, horizon of old level, and the general samples, there has been an improvement in the quality of the No. 8 Shoot: A stoppage has been recently opened out on a pillar at Alice's West, ore from the same has been of moderate quality. 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In the interior of the tube is placed a small indicating sphere, or float of any other suitable form of glass, metal, or any other suitable material, the same being of such weight or gravity as to be capable of floating on the surface of the water contained in the tube and of rising or falling therewith as the same is elevated or depressed. At the lower end of the interior of the tube is placed a spiral metallic spring for the purpose of preventing the indicating sphere or float from striking the bottom of the gauge tube with violence when the water is expelled from the tube by the pressure of the steam through the valve which is provided for its emission at the bottom thereof. A portion of the exterior of the tube is sometimes provided with an opaque coating, upon which when desired a scale may be marked, and in this case it is preferred that the indicating sphere or float shall be black. When such opacity is dispensed with the indicating sphere or float is by preference silver or provided with a reflecting surface. By the employment of the indicating sphere or float the ascertainment of the height of the water in the boiler is much easier, especially when there is but a slight light available, than when the level of the water in the gauge is the only guide. In order to prevent the indicating sphere or float from being ejected from the tube by the water or steam, and also to preserve the same when the gauges are kept in stock, a stop may consist of a collar or any suitable contrivance, is placed in the interior of the tube at either end thereof.

BRITISH MINES.

EAST DARREN.—Oct. 10: In the drift west of rise over the 116, on the south part of the lode, the lode has much improved, being 4 ft. wide, yielding 15 cwt. of lead ore per fathom. In the 80, west of eastern cross-cut, on south lode, the lode is still small and poor. In the 20, east of western cross-cut, on south lode, the lode is 5 ft. wide, looking more promising, yielding from 8 to 10 cwt. of lead

more particularly the almost sudden and unexpected drop within the past three months, which has made a difference of about 700*l*. on our returns since the sale of July 19 last, but from the result of the last week's Cornish ticketing we are encouraged to hope that the turning point has come, and that we shall soon be in receipt of a remunerative price for our produce. We are pleased to say the prospects of the mine continue very encouraging, for not only have we a very

It will be a very important feature to the mine.—Sheffield, Oct. 11. *Sheffield Daily Telegraph*

CAPTAIN ABSALOM FRANCIS
MINING AGENT, ENGINEER AND SURVEYOR.
GOGINAN, ABERYSTWITHE.

Notices to Correspondents.

* * * When inconvenience having arisen in consequence of several of the Numbers starting the last year being out of print, we recommend that the Journal should be kept on receipt; it then forms an accumulating useful work of reference.

IMPORTANT NOTICE.—REDUCTION OF POSTAGE ON THE "MINING JOURNAL."—In consequence of the new POSTAL CONVENTION, which came into operation on July 1, the postage of the *Mining Journal* to many countries will be reduced to one fourth. Henceforth the subscription will be 1l. 10s. 4d. per annum (39 frs.), postage included, for the following countries. The amount will, if desired, be collected at the subscriber's residence at the end of each year. The subscription continues until countermanded:—Austria, France, Belgium, Denmark (including Iceland and the Faroe Islands), Egypt, Germany, Gibraltar, Greece, Heligoland, Italy, Luxembourg, Netherlands, Norway, Portugal (including Madeira and the Azores), Roumania, Russia, Serbia, Sweden, Switzerland, United States, Malta, Turkey, Morocco, Tunis, and the Canary Islands. Spain 1l. 10s. (50 frs.)

THE SUPPLEMENTARY SHEET.—We have received occasional complaints, and of late a good many, that the Journal is delivered by country booksellers without the Supplement. Subscribers would oblige us by demanding that the paper should be handed to them complete, as every Journal is accompanied by the Supplement when it leaves our office, and the fault of omission must rest with the country bookseller or their London agent.

Received.—"J. P." (Parker, N. S. W.): The Shunting Apparatus shall be described in an early Journal.—F. M. F. Cazin (Buenos Aires, New Mexico, Sept. 18): "J. M." (Newcastle, N. S. W.): "L." (Edinburgh) should hardly complain of the letter on a New Railway Era, when he admits that he has never heard of "the late Nicholas Wood." Besides, the second letter should be read in connection with the first, published in the previous week's Journal.—"J. H." (Madrid): "J. P." (Re: ruth): "W. G. S."—"An Artist" (Redesdale): We could not devote so much space to print the article; it is better calculated for a magazine. We are, however, obliged by your polite offer, and for forwarding the copy, which can be had on application at our office—"Shareholder" (Wheat Grenville): "Nemo" (Gravesend).

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, OCTOBER 13, 1877.

MINING, AND THE METAL TRADE.

THE BOARD OF TRADE RETURNS FOR THE FIRST THREE QUARTERS OF 1877.

As to the general commerce of the country, in which, of course, the mining interest is always primarily concerned, very different opinions exist about the results of the last nine months, compared with the corresponding months last year. But the juncture is important. There were many prophets who foretold that the third quarter of the year would prove so profitable as to compensate for such failure as occurred in the earlier part of it. Our review of the whole three quarters will probably satisfy our constituents that the opinions recorded by us at the opening of the year have been fulfilled, and perhaps they will say too faithfully fulfilled, in certain directions.

There is the usual controversy as to the indications of prosperity or adversity afforded by the proportion of exports and imports. We are very deeply interested in that controversy, but unless we afford a separate article to its discussion all our readers will pronounce with us the impossibility of discussing it in an article given especially to mining, and the markets for its production. The total value of imports for the three-fourths of the year now closing was enormous, amounting to 292,528,463l. 10s. 4d. more than in the corresponding part of last year. The exports of British and Irish productions were valued at 147,603,519l., a falling off of 3½ millions from last year; but these were not our only exports—we exported much of what we imported, and of course, therefore, we cannot be said to have paid for any portion of what we re-export. The re-export tables we do not think so creditable to the Custom House or the Board of Trade, which ever may be the responsible party in this instance as the general import and export tables, but they will do well enough for a general but somewhat rough comparison.

We have re-exported more foreign wool, tobacco, tea, spirits, and a few other commodities, and less cotton, silk, coffee, wine, &c. It does not belong to our subject to say more than that (on this department of it), except that our re-export figures do not materially affect our general export enumeration, and that our imports are vastly in excess of our exports. This is a subject of lamentation to our traders and the public generally, but it is well that there is no witch or wizard of Endor to call up the ghost of Mr. Cobden, or he or it would administer a terrible rebuke. He has often said to the author of this article—"Foreigners will send us nothing that is not paid for, but it is not necessary that we should pay in goods after the fact. Foreigners are generally in our debt, and they send us produce against the interest on our loans, our commercial advances, and our territorial property. The produce is what we want, and the money or credit is what they want. Our imports, therefore, show our profits, and the more we receive the better, for no one will give us more than is due to us." Such were the opinions of Mr. Cobden. The Daily News says they are right in the main, but holds back with a timid qualification. It appears to us that the truth enunciated by the great British political economist is incontrovertible in toto.

The trade in metals is generally the key to our commerce and manufactures. The state of things, on the whole, may be pretty accurately determined by the condition of mining and commerce in metals. The very name, Britain, is derived from our metalliferous treasures, as we have proved in former numbers of the Journal, and all through our history our metallic productions has been the kernel of our prosperity.

In noticing our trade in metals we have on former occasions taken different lines of sequence; for this time we shall place it alphabetically, and in that order Copper comes first. The imports of ore were valued for the three-quarter year at 839,096l., an increase of 114,000l. The records of the Custom House as to where it all came from are utterly worthless. The value of regulus imported was 931,954l., at least ½ million more than in the corresponding period last year. Unwrought or part wrought amounted to 2,218,444l., against 120,000l. more last year in the same time. It will be seen that we have imported less made copper, and more of the material for making it, because our own mine did not produce enough—this must be viewed in a favourable light.

Lead stands next in the alphabetical series. Lead mines are prosperous; they are more enquired after on the Stock Exchange and by the general public; they are indubitably more steady and profitable. The imports did not quite reach ½ million in value, against 1½ million the first nine months in last year; this shows the great increase in the consumption of the metal, and the inadequate working up of our own reserves. The imports of quicksilver were valued at 302,500l., a tolerably sharp falling off from last year, and not much more than half the year before. The decline in the consumption of this metal has not as far as we know been satisfactorily explained.

The tin import was valued at 783,635l., a falling off of nearly ½ million from last year, and of nearly 400,000l. from the year before. It is marvellous under such circumstances that the cry should be raised that our markets are inundated by foreign tin, for the cost of imports given above covers blocks, ingots, bars or slabs, and regulus. Zinc (crude and cakes) was imported to the value of nearly ½ million, a decided increase on last year and the year before, which shows that either our requirements greatly augmented, or our production greatly declined. Zinc manufactures were imported to the value of 284,564l., rather more than last year, but the difference was not material. Pyrites were imported to the value of 1,323,783l., a large increase upon last year and the year before. The foreign commerce in this article increases rapidly, while there are also largely augmenting imports from Ireland, not shown, of course, in the tabulated forms of the Board of Trade.

We are not this time so anxious to show the month's imports, but there is a general decline either because we do not want heavier stocks, or because of more extended home production. As to copper imports, there is a trifling increase in regulus, and a very great dimi-

nution in all other assortments; and this is confirmed by the reports of the metal merchants, which it is proper to observe *en passant*, although in this article we are only answerable for official returns.

Lead, it is scarcely necessary to say, varies but little in the month of September. Pyrites increase proportionately upon the shorter and longer period; but quicksilver has doubled for the month, notwithstanding a heavy decline for the quarter—in fact, stocks have fallen too low; but the trade in this metal is rapidly becoming less and less important. The decrease of zinc imports of all qualities for the month is signal, and as far as we can learn from metal merchants who have some scientific knowledge of this commerce, the trade in this metal is likely to decrease, although for the nine months there is some advance. This is contrary to what for a long time we expected would be the case, and is another illustration of the caprices of consumers.

Our re-sale of these imported metals is, of course, an important consideration as a deduction from their competition with our own productions in the home market. As to copper, we exported very much less of imports—about 800,000l. worth this year, against a million and more last, and during the month the decline is 50 per cent. Whatever imported lead or zinc made their way into foreign markets was under the name of British production. Although we sent away nearly as much foreign tin this last month as in the same month of 1876, for the three fourth year the decrease is signal, quite in proportion to our decreased imports.

Whatever may be their view of political economy and the philosophy of commerce, our producers will see with anxious eyes the tables of our exports. Following, for this instance, the alphabetical sequence, we will take Brass first. The export of the month only stands a few pounds less than for September last year, and for the longer period just a proportionate degree less. The decline is remarkable, as the foreign war and the increase of our own military and naval forces call for this material, and it is unhappily to be inferred that there is a decline in the commercial requisition. There is an increase of nearly 100,000l. in the export of British copper for the three quarters, but this is entirely owing to the exit of mixed or yellow sheathing, for which the Turks have been good customers. There has been an augmentation in the export of British lead on both periods, but the export values of this metal in all its forms is remarkably steady. China and Russia continue to be our customers *par excellence*.

The miners and makers of tin resemble the good old British agriculturist, who within mortal memory had always three grievances—"the weather, the times, and the Irish." Our brave Cornish tin miners have not exactly those grievances, but they have complaints of their own which command our sympathy; now, it happens that during the past three-quarters of a year the products of their labours have sold for more money, and 15,000 tons of Cornish tin more than last year have been taken by foreigners, and the proportion for the month is far greater, showing that the British Tin Trade is not only not destroyed, but shows signs of vitality. The changes in the commerce of British zinc are really not worth notice. The trade itself is insignificant, and so are the mutations.

It is not usual for us in the monthly article on the commerce sustained in the superior metals to make any comment on the market for the precious metals, but so much at this juncture turns upon the state of the money market that we must make some comments. The imports of gold and silver for the past month were of the value of 4,321,794l., against 4,204,367l. in the corresponding month of last year, and 1,790,203l. in September, 1875. In the nine months 28,882,000l., against 28,524,613l. in the same space of time in 1876, and 26,457,096l. in the first nine months of 1875. The exports of the precious metals last month were 3,436,282l., against 2,853,655l. in September, 1876, and 1,561,953l. in the corresponding month of 1875. In nine months the total exports of gold and silver were 31,353,758l., against 16,155,515l. in the corresponding quarters of last year, and 16,795,226l. in the same quarters of 1875. It will, therefore, be seen that while the specie imports have not been to any significant extent greater, the exports have been 50 per cent. above average.

We have given these figures because so many correspondents of the Journal and of other papers say that the value of our trade in metals, and the success in mining operations the remainder of this year, will depend upon the gold reserve in the Bank of England. No doubt that is a powerful factor to take into account, but we believe that the war is a disturbing element in the calculation, and must soon create an abnormal demand for precious metals, and for superior metals copper, tin, and lead contrarily distinguished to them.

We think that, favourable and unfavourable, what we predicted of the metal trade and of mining early in the year has been realized; and we do not despair of new and in many cases unexpected opportunities, of revived trade in metals, and renewed energy in mining enterprise.

THE NATIONAL ASSOCIATION OF COLLIERY MANAGERS.

From an article which appears in another column it will be seen that the National Association of Colliery Managers has been formally and practically established. At the meeting held at Manchester, on Saturday, the programme which we published in our last Saturday's Journal was considered, and, as might have been expected, some parts of it were considered impracticable. This was more particularly the case with respect to the different funds: by which it was proposed that provision should be made for widows and children of members; another fund for disabilities arising from accidents; a third for superannuation and retiring; and another for general purposes. To those that are at all acquainted with the working of class associations, it is needless to say that to have four separate and distinct funds to one or all of which each member could contribute as he pleased, was a proposal that practically could not be carried out. But it was as well, perhaps, to have it on the business paper for discussion, for the purpose of showing when put to the test by the light of ordinary experience, how futile would be the efforts to carry it out. As a rule, in the establishing of new societies a great deal more is attempted than it is possible to carry out, and they do most who start with the least pretensions, only keeping in view the main objects for which the society was started. The Colliery Managers' Association, however, starts untrammelled by any promises of what it will do, the views of its promoters being confined to doing the greatest possible amount of good to those who have the management of collieries, by making their position more respected than it now is; by guarding their interests in all future legislation in which they are concerned, and in protecting them from unjust prosecutions, and at the same time making provision for their wives and children in case of their being disabled by accident, or unable to follow their profession owing to sickness or old age. Where death ensued of course, however, the same provision would be made. These objects alone we should think must commend the association to almost every colliery manager in the kingdom, and out of such a body there ought to be no difficulty in founding an association which for intelligence, practical ability, and strength, numerically and pecuniarily, should be almost second to none that we have. There is another point which cannot fail to deeply interest the colliery managers, that is the education of their sons where it is desired that they shall pursue the profession of their fathers. At the present time there are no scholastic institutions where youths are taught even the elementary branches of what may be termed a mining education, but by managers combining together this could be easily effected, so that the next generation might see a superior class of colliery managers to the present one.

With regard to providing for the relatives of those who might be left without means of support, or even of men who from old age or disability are unable to work, we see no difficulty whatever. The licensed victuallers, commercial travellers, warehousemen, and many other less wealthy bodies than those connected with collieries have nice homes for such of their members as require them, so that they are comfortably housed and well maintained in their old age. This could be easily attained and successfully carried out by the colliery managers, who we feel assured would be extensively supported in such a good work by the majority of the colliery proprietors in the kingdom, who are amongst the most munificent supporters we have of all the leading institutions of a public character in the districts

with which they are connected. Their warm support and sympathy in the founding of houses for aged and disabled colliery men, we feel assured would be given with an unsparring hand, so we might look forward to seeing a handsome pile of buildings raised by those connected with our coal mines, of which all have reason to be justly proud. Having taken a good deal of the many advantages that would accrue to colliery managers, their combining together for special and legitimate objects now, in taking leave of it, wish it every success, and hope that advantages will be such as to make it a boon to the present and future members that all will be proud to appreciate, and a boon to those through whose exertions it was called into existence.

OUR EXPORTS OF COAL, IRON, AND STEEL.

On several occasions we have drawn attention to the active petition that was going on in different parts of the Continent between the English and German colliery owners for the Russian other trade in the North of Europe. In doing so we have pointed out that the English colliery proprietors, not to be beaten in markets which they at one time almost had entirely to themselves, had been selling coal at prices which left them no profit. They themselves are only capable of doing, who, judging by players credit for making a present sacrifice in the expectation of probable future advantage. But that they have done so we now prove the most satisfactory, and those who of late have clamoured so loudly for a restriction of production must take like. In the present state of the iron trade our exports of coal of the greatest importance, for any marked decline in them would lead to our collieries being far less fully employed than they are. As it is, however, our exports for the last month, as we find that the shipments of coal from England to Russia were 83,024 tons, against 155,879 tons in September, 1876. Germany also taken considerably less from us, as the Government doing all it can to aid the Westphalian colliery owners in the English coal out of the northern markets. To effect this prices have been brought down to a very low point, which our colliery owners have had to come down to, so that English coal, which average September, 1876, about 10s. 9d. per ton for exportation, last month scarcely realised 10s. per ton. Taking the first nine months of 1877 being lower by fully 10d. per ton than in 1876. The fall off has been principally to Russia, France, Sweden, and India. Still, contrary to what has been the rule for many years we have to note a decline in the exports of our coal for the three-quarters of the present one, supplemented by a considerable reduction in the price.

In our iron manufactures nothing has been of a more marked character than the great decline which has taken place in the export of iron rails. At one time we used to export vast quantities almost every part of the world, the United States in particular being a very good customer. But all this is now changed—rails are things of the past, that have had their day. Last month our total exports were only 12,639 tons, against 12,428 tons in September, 1876; not a ton, however, was sent to the United States, and only 83 tons to Russia, against 1228 tons during the months of last year. Sweden and Norway, where the traffic of lines of railway is very light, were the largest consumers, with Brazil and Australia, where great progress is being made the development of the internal resources of those extensive countries; steel rails, however, are increasing in demand, and the quality sent out of the country during September last was so heavy as for the same month of last year, there is very little doubt but what the close of the year will show much better results. In hardware and cutlery the returns for the month are more satisfactory, and show that we have done an increased business with United States, where trade for a long time has been in a stagnant condition, but is now showing strong symptoms of resuming former position as a large consumer of English cutlery and goods. As might be expected, Russia shows to disadvantage respect to hardware and cutlery. Looking, however, at steel goods every description, there is every prospect that our exports of during the next three months will far exceed those of any previous quarter of the present year.

OUR RAILWAY IRON ABROAD.

Our exports of railway iron exhibited very great depression in September, having only amounted for that month to 39,453 tons compared with 46,912 tons in September, 1876, and 55,494 tons in September, 1875. Not a single ton of rails of an average size appears to have been sent to the United States in September, although it went to the Great Republic in September, 1876, and a similar quantity in September, 1875. The collapse of Peruvian credit and severe economy which is being enforced by Chili have told upon our exports of railway material to those countries, but Italian credit being yet unshaken there is still some Brazilian demand for rails, 3476 tons having been shipped to Brazil in September, the nine months ending September 30 this year we exported together 333,113 tons of railway iron to various British colonies foreign countries, as compared with 321,145 tons in the corresponding period of 1876, and 447,480 tons in the corresponding period of 1875. We have on more than one occasion called attention to the growing importance of the Australian demand for our rails, and we were justified in doing so may be inferred from the fact that the Australias in the first nine months of this year ranked second in the list of rail-consuming countries—that is, consuming more English rails. The Australian colonies were, on the other hand, very hard in the race by British India, but still they slightly in front, and must be placed immediately after Russia in the list of our external customers for our railway material. The demand for rails on Canadian account has been weak of late, still the colonial consumption of our rails has been very good, year upon the whole. This will be seen on an examination of the annexed short table, showing the exports of British railway iron to the three principal groups of colonies during the first eight months of the last three years:—

	1875.	1876.	1877.
British America	Tons 83,848	54,569	50,481
British India	25,377	42,437	57,481
Australia	59,024	15,024	57,481

Total

Canadian railways have, as a rule, been great failures; and the railway credit is weak in consequence, so that the Canadian demand has been flat. The competition of American rails has also, probably, had some effect upon the consumption of our railway material in Canada. The credit of the Anglo-Indian Government has been served strong, the demand for our rails in British India has been a great increase of animation. The vigour impressed upon the construction of the Sate lines and the new works necessitated by the largely-increased traffic upon the guaranteed lines have, of course, greatly contributed to this result. As regards the Australian demand, we reiterate our conviction that it is one of the mainstays of the British iron trade. The growth of wealth and the extension of the Antipodes, and the good sense with which the various Australian colonies have been administered, and the whole, lead to the anticipation that the work of Australian construction will be prosecuted with considerable vigour for the next few years. It must be remembered that almost every one of the extensions carried out in Australia is proceeded with by the various Australian Governments; persons finding that for the necessary works cannot, in consequence, suffer, and the case no check to construction is likely to arise in respect to the failure of credit. The exports of our rails to Russia to September amounted to 66,780 tons, as compared with 60,691 tons

of them—will be got to work at present. The men in this case have signally failed, and the reason is obvious—they had no just grounds for striking, and, of course, received no assistance from the Union funds, while the general public refused to lend them any substantial support; they have, therefore, been starved into submission.

A strike is expected at the Acomb Colliery, near Hexham, the men have given notice demanding an advance in prices of 3d. per ton, which the masters refuse to comply with. In the present state of the coal trade these demands are simply preposterous. The subject has been before the committee of the Miners' Union, and they advise that the question be allowed to stand over in the present state of affairs. The men state that their average earnings are 4s. 10d. per day, while the average earnings of the men in the county are 5s. 6d. per day. These men ought to learn a lesson from the utter failure of the Ryhope men, and not commit such a mistake as to strike under the circumstances they are placed in, and especially against the advice of the officials of their Union.

A general meeting of the North of England Institute of Mining and Mechanical Engineers was held in the Wood Memorial Hall, on Saturday, for the purpose of the election and nomination of members. It has been arranged that the members of the Institute shall visit the Thorneycroft, Greenside, and Settlingstones Mines on Oct. 18. These mines are situated near the Newcastle and Carlisle Railway, 25 miles west of Newcastle. The mines are near the Budham Quarries, and the district is one of great interest to the geologist and mining engineer.

TERRIBLE COLLIERY EXPLOSION.

A dreadful explosion happened, on Thursday, at the King Pit, Pemberton, belonging to Messrs. Jonathan Blundell and Son, Wigan. Some 35 of the workmen have been killed. The manager, the certificated manager, and the underlooker at the pit, three of the band of explorers, have also lost their lives in a noble effort to save their fellow-men. The collieries of Messrs. Blundell are some of the finest in the country, and the manager, Mr. Watkin, who has fallen a victim to the deadly after-damp, has at all times received warm encomiums for the manner in which the now extensive concern has been gradually built up. The pit where the explosion occurred is one of two, the first of which was sunk in Dec. 2, 1867, with the object of winning the Wigan seams—the King coal and the Cannel seams and the Orrell 5 ft. and 4 ft. or Arley seam. The shafts are 640 yards deep, the down-cast being called the Queen Pit, and the up-cast King Pit. The former is 17 ft. 4 in. in diameter at the top, and 16 ft. at the bottom, the latter 19 ft. 4 in. at the top, and 18 ft. at the bottom, the difference in the diameter being for the purpose of admitting tubing in case the water from the Pemberton seams should make its way into the workings. The shafts are lined throughout with massive fire-clay quarries, and down each side run pairs of railways, which are gripped in the cages. These hold six tubs each, and are made entirely of steel, and to the excellent arrangements thus adopted there can be no doubt is owing the fact that the terrible explosion has not caused more damage to the shaft. From the up-cast shaft the 4 ft. is won at a distance of 270 yards, the 9 ft. at 300 yards, and the King coal and Cannel at 364 yards, while from the other shaft the Orrell 4 ft. and 5 ft. seams are won. There is, however, communication between both shafts in each mine for the purpose of ventilation, this being done by means of a large Gulub fan 40 feet in diameter, and 15 feet in width, driven by two engines, one of which is capable of doing the work in case of emergency, and is calculated to produce 225,000 cubic feet of air per minute. The up-cast shaft is covered at the top with a scaffold, and the air enters the fan by means of a large culvert, and at the top of the drift, between the fan and the drift, there is an escape chimney provided with four large doors, so that in case of an explosion, the blast passes through without injuring the fan. It was here that there was the first intimation on the surface of anything having gone wrong in the workings. A cloud of dust and smoke shortly after one o'clock told those near that a terrible explosion must have happened. A knocking was also heard from below, and quickly the cages were lowered. It was then found there had been a fearful blast in the 9 ft. seam, and the few living men and boys were at once wound to the surface. An exploring party was immediately formed, consisting of Mr. Watkin, manager; Mr. Cooke, certificated manager; Mr. R. Laverick, underlooker at the King Pit; Messrs. Crossley and A. E. Wood, surveyors; George Ashurst, Joseph Simpkin, W. Stephen, underlooker, and several other officials, and the men to the number of some 600 in the other seams were wound to the surface, and work stopped. A first examination from the down-cast shaft showed that progress by that means was impossible, the air-doors and brattings being blown down, and the ventilation interrupted, and the exploration stopped by after-damp. A descent was made of the up-cast shaft, and it was then found that their worst fears had been realised, for the terrible force of the explosion prevented the party proceeding far into the work. The main air-way between the two shafts was cleared, and a fresh supply of pure air sent along it; but the after-damp in the workings was so powerful as to prevent any lengthened stay there. The roads were also blocked up by broken tubs, doors, and falls of coal, and despite the untiring exertions of the explorers little or no progress was made.

Shortly after two o'clock Messrs. Watkin, Cooke, and Laverick went in the hope of saving some of the men, leaving Messrs. Crossley, Wood, Ashurst, and others behind. After waiting for some time the party who remained behind became alarmed, owing to not hearing from their leaders who had gone forward, and it was thereupon determined that a search be made, and they started for that purpose. On reaching a big brow about 200 yards from the mouth of the workings and 100 yards from the main air-way, they were horrified to find the managers lying in an unconscious state, Mr. Cooke being foremost, and the other two a short distance behind, all having fallen with their faces in the direction of the shaft, evidently showing that means was impossible, the air-doors and brattings being blown down, and the ventilation interrupted, and the exploration stopped by after-damp. A descent was made of the up-cast shaft, and it was then found that their worst fears had been realised, for the terrible force of the explosion prevented the party proceeding far into the work. The main air-way between the two shafts was cleared, and a fresh supply of pure air sent along it; but the after-damp in the workings was so powerful as to prevent any lengthened stay there. The roads were also blocked up by broken tubs, doors, and falls of coal, and despite the untiring exertions of the explorers little or no progress was made.

Deprived of the chief heads of the management the workmen seemed paralysed, and word was sent for some of the principal engineers in the district to come and assist the explorers. Mr. George Holland, of the Winstanley Collieries, was present in the afternoon, and went to the assistance of the explorers. The sad death of Mr. Watkin has created a profound sensation in the town. He has only recently been placed on the Commission for the Peace for the Borough. He has been the last two years occupied the post of Chairman of the Pemberton Local Board since its formation, and was also identified with several of the local institutions. The deceased gentleman was a native of Durham, and has resided for the last 13 years in the district. He only returned on the previous day from a holiday tour. He leaves a widow but no children. Mr. Cooke leaves a widow and seven daughters and Mr. Laverick a family of four. The number killed is roughly estimated at 40. No cause can yet be assigned for the explosion. It is believed that the coal is on fire.

THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week there has been more business done, and the tendency of prices generally is upward. There can be no doubt a decided revival in business has now set in, and it will be more difficult every day now to make investments in anything like the low quotations lately current. Stock is becoming very scarce, and, with an improved demand, transactions will only be effected at gradually higher prices.

In shares of iron and coal concerns, Ebbw Vale have advanced 2s. 6d. per share, while Bolckow, Vaughan, and Co. have fallen 15s. Lechoe and Caplethorpe, 5s.; also Orma and Cleland, 6d. Five Coal shares are now 6d. paid; a call of 11. per share having been made. Lechoe and Caplethorpe are still flat, owing to the investigation not being thought likely to disclose a favourable state of affairs. Andrew Knowles and Sons are at 32s. 6d. prem.; Bolckow, Vaughan, A. 83½; ditto, B. 35; and ditto (pref.), 19½; Cardiff and Swans, 22s. 6d. to 27s. 6d.; Crown Preserved, 25s. to 35s.; Darlington Iron, 12½ dis.; Great Western, 40s.; Llynvi, Tondra, and Ogmore, 7; Nant-y-Glo and Blaenau, 21½; Newport Abercrombie, 55s.; Oakham, 10s.; Pelsall debentures, 100 to 100; Sheepbridge (new), 8½; ex div.; Skerres, 5½; South Wales, 6s.; West Cumberland, 13 to 14 dis.

In shares of foreign copper concerns, Tharsis (new) have advanced 6s. 3d., and Huntington 1s., while Tharsis has declined 2s. 6d. The annual drawing of 12,500l. Debentures Panuclio Company comes off on the 15th inst. Huntington is steady again, though the intrinsic value seems very small. Tharsis are so rare. Rio Tinto 5 per cent. are at 56. Yorke Peninsula (pref.), 15s. to 15s. In shares of home mines there has been some request for lead and tin shares. The next sale of Glasgow Caradon copper ore will be 335 tons; the sale last month was 195 tons, while the sale in the corresponding month of 1876 was 245 tons; of 1875, 245 tons; of 1874, 245 tons; and of 1873, 309 tons. Leadhills are now quoted ex dividend. West Tankerville are brimer on prospects of the new lode proving good. Bampfyde are at 5s. 3d.; Carr Brea, 3d.; Combsmartin, 4s. to 6s.; Dolcoath, 3s.; East Chiverton, 3s.; East Van, 70s.; Elgar, 20s.; Devon Consols, 7s.; Glenroy, 18s. 9d.; Great Laxey, 21; Gunnislake (Olters), 25s.; Holmbush, 30s.; Kilfrith, 2s. 6d. to 6s.; Leadhills, 5½ to 5½; North Laxey, 13s. to 14s.; Parys Mountain, 10s.; Perkins Beach, 20s.; Plympton, 5s.; Prince of Wales, 2s. 6d. to 5s.; Roman Graves, 8½; Rookhope, 21s. 3d.; Tintoff, 14; South Cumborough, 7½; South Graves, 30s.; West Combsmartin (20s. paid), 17s. 6d.; West Chiverton, 14½; Wheel Agar, 80s.; Wheel Grenville, 65s.

In shares of gold and silver mines, Richmond have advanced 12s. 6d. per share, the week's run being 455,000. Almaden are at 5s. to 5s. 6d.; Antioquia, 13s. 6d.; Chicago, 20s.; Emma, 1s. 3d. to 3s. 9d.; Eschschuer, 4s. to 6s.; Flagauff, 40s.;

Frontino and Bolivia, 60s.; Gold Run, 10s.; I. X. L., 5s. to 7s.; Last Chance, 17s. 6d.; St. John del Rey, 320; South Aurora, 4s. Oil companies shares are steady. Dalmeny are nominally 5s. lower. Runcorn Soap and Alkali are at 6½ dis. Shares of miscellaneous companies are quite neglected, and show no alteration. Bridgefield and Victoria Salt are at 6½. General Sewage, 8 dis.; Hopkins, Gilkes, and Co., 7½ dis.; Miner's Safe, 8½; Palmer's, A. 18; ditto, B. 14½ to 14½ dis. Chemical companies shares are quiet. Langdals are at 75s. to 75s. 6d.; Lawes, 6½ to 7½; and Newcastle, 40s. to 45s. On contango-day (Tuesday) the following were the rates of continuation current:—Contangoes: ¼d. on Canadian Copper; 1d. on Glasgow, Caradon; 1d., even, on Huntington; 2d. on Marbella; 2d. on Oakbank Oil; 4½d., 6d. on Richmond; 6d. on Uphall Oil; 7½d., 9d. on Young's Paraffin.—Backwardations: 4½d., 6d., 6d., 10½d., 1s. on Tharsis.—Even: Monkland Iron. On comparing the making-up prices for the past account on the following shares with those of the previous week the variations shown are:—Richmond have advanced 10s. per share; Tharsis, 8s. 9d.; Uphall, 6s. 3d.; Tharsis (new), 1s. 3d.; and Oakbank, 1s.; while Canadian Copper and Young's Paraffin have each declined 2s. 6d., Huntington 2s., and Orma and Cleland 6d. The following are unaltered:—Glasgow Caradon, Glasgow Port Washington, Marbella, Monkland, ditto (pref.), and Oakbank (new).

Subjoined are this week's quotations, &c., of mining and metal shares quoted on the Scotch Stock Exchanges:—

Per share.	Paid up.	Dividend.	Rate per cent.	Description of shares.	Last price.
£10	£8	£2 8½	£ 6½	COAL, IRON, STEEL.	
10	10	6	6	Arncliffe Coal (Limited)	8
10	10	6	6	Benhar Coal (Limited)	71.8s. 6d.
10	10	6	6	Ditto	71.8s. 6d.
100	50	18s. 9d.	41s. 6d.	Bolckow, Vaughan, and Co. (Lim.)	53½
10	10	nil	nil	Chillingham Iron (Limited)	70s.
10	10	nil	nil	Chillingham Iron (Limited)	70s.
32	29	nil	nil	Ebbw Vale Steel, Iron, and Coal (Lim.)	9½
10	6	nil	nil	Fife Coal (Limited)	70s.
10	10	nil	nil	Glasgow Port Washington Iron & Coal (L)	35s.
10	10	nil	nil	Ditto Prepaid	3s.
10	10	nil	nil	Lochoe and Caplethorpe (Limited)	50s.
10	10	nil	3	Marbella Iron Ore (Limited)	58s.
10	10	nil	nil	Monkland Iron and Coal (Limited)	56s.
10	10	nil	nil	Ditto Guaranteed Preference	52½
100	100	nil	nil	Nant-y-Glo & Blaenau Ironworks pref. (L)	21
6	6	nil	nil	Orma and Cleland Iron & Coal (L & Red.)	29s. 6d.
1	1	17½	15	Scottish Australian Mining (Limited)	40s.
1	1	17½	15	Ditto New	8s. 9d.
Stock	100	nil	nil	Shotts Iron	91
4	4	nil	nil	COPPER, SULPHUR, TIN.	
10	7	40	40	Canadian Copper and Sulphur (Lim.)	5s.
1	1	15	7½	Cape Copper (Limited)	35
1	1	15	7½	Glasgow Caradon Copper Mining (Lim.)	23s.
1	1	15	7½	Ditto New	18s.
1	1	15	7½	Huntington Copper and Sulphur (Lim.)	29s.
25	25	nil	nil	Kapunda Mining (Limited)	62½
10	10	nil	nil	Panucilio Copper (Limited)	62½
10	10	6	6	Rio Tinto (Limited)	75s. 6d.
20	20	7	7	Ditto, 7 per cent. Mortgage Bonds	14½
100	100	5	5	Do. 5 p.c. Mor. Deb. (Sp. Con. Bds.)	53½
10	10	nil	nil	Russia Copper (Limited)	40s.
10	10	22½	20	Tharsis Copper and Sulphur (Limited)	22½
10	7	22½	20	Ditto New	17s. 9d.
1	1	1	1	Yorke Peninsula Mining (Limited)	5s.
1	1	1	1	Ditto, 15 per cent. Guaranteed Pref.	17s. 6d.
1	1	1	1	GOLD, SILVER.	
1	1	1	1	Australian Mining Investment (Limited)	8s. 9d.
6	6	7s. 6d.	7s. 6d.	Richmond Mining (Limited)	5½
10	7	6	6	OIL.	
1	1	7½	25	Dalmeny Oil (Limited)	8
1	1	7½	25	Oakbank Oil (Limited)	40s. 6d.
1	1	7½	25	Ditto	12s.
10	10	3½	7½	Uphall Mineral Oil (Limited)	9½
10	10	3½	7½	Ditto "B" Deferred	9½
10	10	3½	7½	West Calder Oil (Limited)	75s.
10	8½	9	17½	Young's Paraffin Light & Mineral Oil (L)	15
50	25	5	6	MISCELLANEOUS.	
20	14½	nil	nil	London and Glasgow Engineering & Iron Shipbuilding (Limited)	25½
7	7	20	10½	Peruvian Nitrate (Limited)	10
10	10	6	6	Phospho Guano (Limited)	101s. 3d.
10	10	6	6	Scottish Wagon (Limited)	11½
10	4	6	6	Ditto New	87s. 6d.

NOTE.—The above lists of mines and auxiliary associations are as far as can be ascertained, Scotch companies only being inserted, or those in which Scotch investors are interested. In the event of any being omitted, and parties desiring a quotation for them and such information as can be ascertained from time to time to be inserted in these lists, they will be good enough to communicate the name of the company, with any other particulars as far as possible.

J. GRANT MACLEAN, Stock and Share Broker.

Post Office Buildings, Stirling, Oct. 11.

JAPAN.—The mines are rich and the country fertile. The gold mines of Sado are under a resident German engineer, and produce \$9000 a month profit. There are also mines of copper and petroleum wells in the province of Nagata.

WROUGHT-IRON WHEELS.—The object of the invention of Mr. L. SCHWARTZKOPFF, of Berlin, is to make the nave and the spokes of wrought-iron wheels, especially for railway carriages, without any weld and out of a single bloom. For this purpose he uses a mould of cast-iron or other suitable material consisting of two parts, each part having on its face the half mould of the nave and spokes to be produced. Moreover, the upper part has in its centre an opening of about the diameter of the nave, and of a length sufficient to contain the bloom out of which the nave and spokes are to be made. The two parts of the mould are firmly bolted together and placed under a powerful hydraulic press connected to an accumulator or other arrangement for storing up water pressure. A bloom of proper size, to which a welding heat has been given, is then thrown into the aforesaid central opening of the upper part of the mould, and by means of the hydraulic press a piston is made to enter into this opening, thereby pressing or squeezing the material of the bloom during its soft state into all the cavities of the mould, so as to complete the nave with the spokes at a single operation. The parts of the mould are then separated, and the finished piece is taken out.

NEW MOTOR.—An improved motor which depends for its action upon the well-known law of the increase of pressure of a fluid jet as its velocity is diminished has been invented by Mr. R. ADAM, of Coatbridge. The motor consists of a wheel or disc carried on a revolving shaft, and contained within a closed casing in which it is free to rotate. The wheel or disc is formed at its circumference with teeth, which are straight on one side and curved or inclined on the opposite side. At a point in the circumference of the casing, between the interior of which and the circumference of the wheel there is a clear or free space, a nozzle of a small bore is situated longitudinally or approximately so, and this being in connexion with a source of water supply at high pressure admits a small jet of water at the high velocity corresponding to the pressure to the interior of the casing. This jet of water after it escapes from the nozzle strikes (at a tangent or nearly so) the straight side of the teeth in the circumference of the wheel or disc, and its velocity becoming reduced it escapes by the outflow formed at an opposite point or other part of the casing. The inclined or curved side of the teeth in the wheel or disc enable it to rotate in the water with a minimum of retardation.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Oct. 4	Central Foxdale	62	£13 5 0	St. Helens Smelt. Co.
6	Great East Foxdale	23	12 5 0	ditto
6	South Darby	25	17 2 6	Walker, Parker, and Co.
8	Foxdale	110	2 5 0	Nevill, Druce, and Co.
10	Great Dyffryn	60	12 4 6	Walker, Parker, and Co.
11	Talargoch	70	12 16 0	ditto
	Maesryddu	30	13 1 0	ditto
	Cotila Llys	30	13 1 0	ditto
	North Hendre	50	12 6 0	ditto
	Gorsedd and Merilyn	50	13 19 0	Adam Eytton.
	Prince Patrick	20	12 15 6	Sheldon, Bush, and Co.
	United Mines	20	12 13 6	Walker, Parker, and Co.
	Rhydydd	15	12 8 6	Adam Eytton.
	Victoria	7	11 6 0	ditto
	Grosvenor	7	12 13 6	ditto

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Oct. 10	Talargoch	50	£4 9 6	Bagillt Smelt. Co.
	ditto	50	3 16 6	Dillwyn and Co.
	ditto	50	3 16 0	Vivian and Sons.
11	West Tankerville	20	3 14 0	Dillwyn and Co.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Oct. 11	Parys Mountain	42	£2 10 0	Nevill, Druce, and Co.
	ditto	40	0 18 0	H. Hills and Sons.

COAL MINES REGULATION ACT, 1872

EXAMINATION FOR MANAGERS' CERTIFICATES OF COMPETENCY.
DISTRICT UNDER THE CHARGE OF THOMAS EVANS, Esq.,
H.M. INSPECTOR OF MINES.

NOTICE IS HEREBY GIVEN, that an EXAMINATION for MANAGERS' CERTIFICATES OF COMPETENCY, under the ACT, will be HELD on the 30th and 31st day of October, 1877, at the DISTRICTS INTENDING TO PRESENT THEMSELVES at such Examination must, on or before the 27th day of October instant, notify such intention to the Secretary of the Board of the above-mentioned District, from whom all information as to particulars can be obtained.

By order of the Board,
WILLIAM SAUNDERS, The Warwick, Derby, Secretary.
N.B.—Persons who do not reside within the District are equally eligible for nomination with those who do.

COAL MINES REGULATION ACT, 1872

EXAMINATION FOR MANAGERS' CERTIFICATES OF COMPETENCY.
DISTRICT UNDER THE CHARGE OF W. ALEXANDER, Esq.,
H.M. INSPECTOR OF MINES.

NOTICE IS HEREBY GIVEN, that an EXAMINATION for MANAGERS' CERTIFICATES OF COMPETENCY, under the ACT, will be HELD on the 23rd day of November, and CANDIDATES INTENDING TO PRESENT THEMSELVES at such Examination must, on or before the 20th day of November, notify such intention to the Secretary of the Board of the above-mentioned District, from whom all information as to particulars can be obtained.

By order of the Board,
C. MACPHERSON, 135, St. Vincent-street, Glasgow, Secretary.
N.B.—Persons who do not reside within the District are equally eligible for nomination with those who do.

THE NATIONAL ASSOCIATION OF COLLIERY MANAGERS.

At a MEETING held at the Brunswick Hotel, London, Manchester, on Saturday, the 6th instant, a Secretary and a Treasurer were appointed to act with the Committee previously elected. An ADJOURNED MEETING will be HELD at the same place on Saturday, the 20th instant, at 3.30 p.m. prompt. The Association is open to all Certificated Colliery Managers in the United Kingdom.

Colliery Managers desirous of becoming Members will communicate with one of the undersigned, viz.—
R. HENRY NORTON, Sec. pro tem, Ravenhill, St. Helens, Lancashire.
J. ROTHERY, Cut-yke, Castleford, Yorkshire.

THE NEW ZEALAND KAPANGA GOLD MINING COMPANY (LIMITED).

Notice is hereby given, that a SPECIAL MEETING of the shareholders of the company will be HELD at No. 14, Austinfriars, E.C., in the City of London, on THURSDAY, the 15th day of October instant, at Half-past Two o'clock in the afternoon, to take into consideration the present financial position of the company, and to pass such resolutions as may be necessary to authorise the issue of fresh capital.

By order, W. J. LIVINGSTON, Secretary.

THE HULTAFALL MINING COMPANY (LIMITED).

Notice is hereby given, that in accordance with the Companies Act, the ORDINARY GENERAL MEETING of this company will be held at the offices, as below, on FRIDAY, the 19th day of October instant, at Three o'clock in the afternoon.

By order, W. J. LIVINGSTON, Secretary.

THE CLEDDAU VALLEY SLATE QUARRIES COMPANY (LIMITED).

Notice is hereby given, that an EXTRAORDINARY GENERAL MEETING of the shareholders and debenture holders in this company will be HELD at the offices of the company, No. 78, Coleman-street, London, E.C., on TUESDAY, the 15th day of October next, at Half-past Twelve o'clock in the afternoon, for the purpose of authorising the directors to alter the terms of issue of the debentures still in the hands of the company.

By order, ROBERT HILLS, Secretary (pro tem).

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For further particulars, apply, by letter, to "B," care of E. W. Allen, 11, Ave Maria-lane, London.

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Full particulars of the above and other valuable LEAD MINES will be found in the SIXTH EDITION of Mr. MURCHISON'S work on BRITISH LEAD MINES, published THIS DAY, with Maps, &c., price 2s. 6d. The Preface to the Sixth Edition is published.



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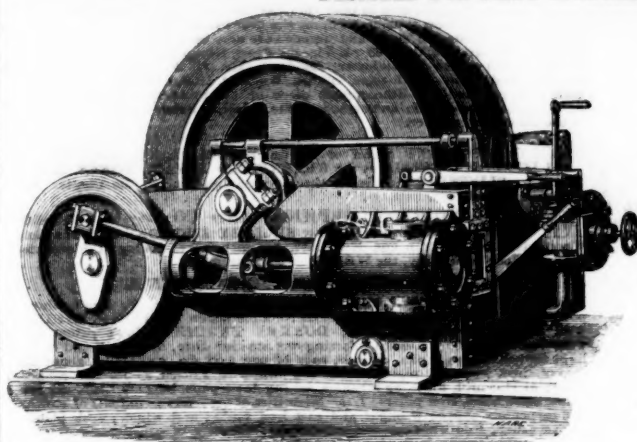


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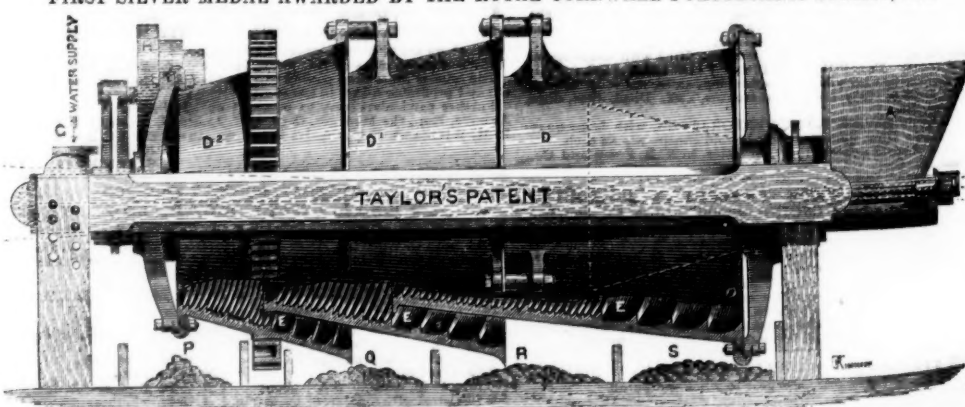
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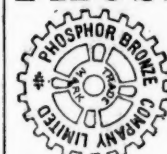
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Shares.	Mines.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
1000	Alderley Edge, c, Cheshire*	10 00	—	—	12 11 8	0 6 0	Jan. 1876
15000	Balmynheer, t, Wendron (4000 to is.)	1 0 0	—	—	0 2 0	0 2 0	Nov. 1876
3000	Bampfylde, c, t, Devon*	1 0 0	—	—	0 2 0	0 2 0	June 1876
4000	Brookwood, c, Buckfastleigh	1 16 0	—	—	3 16 0	0 3 0	Nov. 1876
3000	Bryn Allyn, t, Denbigh (101 sh.)	2 0 0	—	—	0 7 0	0 7 0	Jan. 1876
3400	Cashwell, t, Cumberland*	2 10 0	—	—	1 9 6	0 2 0	Aug. 1876
1000	Carl Brea, c, t, Illogan†	26 7 6	—	—	308 0 0	1 0 0	Feb. 1876
2450	Cook's Kitchen, t, Illogan†	23 17 3	—	—	11 17 0	0 7 0	Jan. 1876
10240	Devon Gt. Consols, c, Tavistock†	1 10 0	—	—	116 15 0	0 5 0	July 1876
4200	Delocath, c, t, Camborne	10 14 10	—	—	111 16 3	0 5 0	Sept. 1876
5000	East Black Craig, t, Scotland*	8 0 0	—	—	0 10 0	0 10 0	Feb. 1876
300	East Darren, t, Cardiganshire	32 0 0	—	—	235 10 0	1 0 0	Aug. 1876
6 00	East Pool, t, c, Illogan	0 9 9	—	—	15 2 3	0 2 0	June 1876
40 00	Glasgow Carr, c, t, 10,000 £1 p. 10,000 £1 p.	—	—	—	0 12 10	0 6 0	Mar. 1877
7500	Gorsedd and Merlyn Cons., t, Flint	2 10 0	—	—	0 5 0	0 5 0	Aug. 1876
18000	Great Dylife, t, t, Montgomery	4 0 0	—	—	0 2 6	0 2 6	Apr. 1876
18000	Great Laxey, t, t, Isle of Man†	4 0 0	—	—	22 13 0	0 10 0	Oct. 1876
615	Gt. Retallick, t, t, Penrynabuloe	4 10 8	—	—	0 1 6	0 1 6	May 1876
35000	Gt. West Van, t, Cardigan*, pref.	2 0 0	—	—	1 15 0	0 3 0	Aug. 1876
6400	Green Hurth, t, Durham*	0 0 0	—	—	0 12 0	0 4 0	Feb. 1876
30000	Grogwinion, t, Cardigan*	2 0 0	—	—	0 13 9	0 1 0	Oct. 1876
9830	Gunnislake (Clitters), t, t	8 5 0	—	—	62 5 0	0 15 0	Oct. 1876
1024	Herodfoot, t, near Liskeard	8 10 0	—	—	0 1 0	0 3 0	Nov. 1876
18000	Hinton Down, c, Calstock*	1 0 0	—	—	0 3 6	0 3 6	July 1876
8000	Holmshush, t, t, Calington*	1 0 0	—	—	82 5 0	0 10 0	Oct. 1876
2400	Isle of Man, t, t, Isle of Man†	26 0 0	—	—	0 12 0	0 6 0	Oct. 1876
50000	Leadhills, t, t, Lanarkshire	6 0 0	—	—	582 10 0	1 0 0	July 1876
400	Lisburne, t, Cardiganshire	18 16 0	—	—	0 9 0	0 4 6	Nov. 1876
14000	Llanidloes, t, t, Montgomery	3 0 0	—	—	0 17 6	0 1 6	Jan. 1876
6120	Lovelis, t, Wendron	0 16 0	—	—	7 15 0	0 2 0	Jan. 1876
9000	Marke Valley, c, t, Linkinhorne	5 8 6	—	—	67 5 2	0 5 0	Aug. 1876
9000	Miners Mining Co., t, Wrexham*	8 0 0	—	—	23 11 6	0 3 6	Jan. 1876
30000	Minning Co. of Ireland, c, t, t	7 0 0	—	—	1 10 0	0 1 0	July 1876
444	North Busy, c, Chacewater	3 9 6	—	—	12 18 0	0 2 6	Aug. 1876
10 29	North Hendre, t, Wales	2 10 0	—	—	0 9 0	0 9 0	July 1876
6000	Pedn-ar-drea Con, t, Redruth	0 8 6	—	—	8 18 0	0 2 0	July 1876
5000	Pennal, t, St. Agnes	3 0 0	—	—	0 2 8	0 8 0	Nov. 1876
6000	Pennant, t, t, North Wales*	3 0 0	—	—	0 14 0	0 1 3	Jan. 1876
45 793	Pennarth, t, t, Gwynnapp	2 0 0	—	—	0 2 6	0 4 0	Nov. 1876
12 000	Phoenix, t, W. Phoenix, t, c, Link.	3 4 9	—	—	0 10 0	0 3 6	Jan. 1876
18000	Prince Patrick, t, t, Holywell	1 0 0	—	—	55 0 0	0 10 0	Jan. 1876
12000	Roman Gravel, t, Salop*	7 10 0	—	—	218 0 0	1 0 0	Sept. 1876
512	South Cardon, c, St. Cleer	1 5 0	—	—	0 3 0	0 3 0	Jan. 1876
6123	South Condurrow, t, c, Camborne†	6 8 6	—	—	0 7 0	0 10 0	Oct. 1876
12000	St. Harmon, t, t, Montgomery	3 0 0	—	—	0 7 0	0 10 0	Oct. 1876
1 000	St. Fr. Patrick, t, t, (8000 sh. issued)	1 0 0	—	—	4 17 0	0 5 0	Dec. 1876
1 000	Tankerville, t, Salop*	6 0 0	—	—	50 8 6	0 5 0	May 1876
1000	Tincroft, c, t, Pool, Illogan†	9 0 0	—	—	22 3 6	0 12 0	Oct. 1876
18000	Van, t, Llanidloes*	4 8 0	—	—	65 0 0	0 10 0	Jan. 1876
3 000	W. Chiverton, t, Penrynabuloe†	12 10 0	—	—	1 19 0	0 4 0	July 1876
1783	West Poldice, St. Day	10 0 0	—	—	22 5 0	0 10 0	Aug. 1876
612	West Tolgus, c, Redruth	95 10 0	—	—	3 12 6	0 5 0	Oct. 1876
2048	West Wheal Frances, t, Illogan	28 13 0	—	—	0 6 0	0 3 0	Nov. 1876
12000	West Wheal Valley, t, t, Montgomery	3 0 0	—	—	15 0 0	0 2 0	Aug. 1876
1024	Wh. Eliza Consols, t, St. Austell	2 13 10	—	—	11 19 6	0 5 0	July 1876
2048	Wh. Eliza, t, t, St. Agnes	4 8 6	—	—	0 4 6	0 4 0	Nov. 1876
4205	Wh. Eliza, t, t, St. Agnes	4 8 6	—	—	522 10 0	4 0 0	Aug. 1876
35000	Wh. Newton, c, c, s, t, Calstock*	1 0 0	—	—	0 4 0	0 10 0	July 1876
80	Wh. Owens, t, St. Just†	86 5 0	—	—	0 4 0	0 10 0	July 1876
6000	Wh. Prussia, t, Redruth	2 0 0	—	—	52 9 0	0 2 6	Mar. 1876
35000	Wicklow, c, s, t, t, Wicklow	3 10 0	—	—	0 10 6	0 4 6	Oct. 1876
10000	Wye Valley, t, Montgomery*	3 0 0	—	—			

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Shares.	Mines.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
3550	Alamillos, t, Spain†	3 0 0	—	—	1 18 3	0 1 0	Oct. 1876
30000	Almaden and Tinto Consol., t, t	1 0 0	—	—	0 6 3	0 1 0	May 1876
20000	Australian, c, South Australia†	7 7 8	—	—	0 19 6	0 1 8	July 1876
10000	Battle Mountain, t, c, (6240 part pd.)	8 0 0	—	—	0 10 0	0 10 0	Nov. 1876
18000	Battle Mountain, t, c, California†	4 0 0	—	—	0 14 0	0 10 0	Jan. 1876
12320	Burra Burra, t, c, So. Australia	8 0 0	—	—	28 10 0	1 0 0	Oct. 1876
20000	Cape Copper Mining, t, So. Africa	7 0 0	—	—	0 5 0	0 2 4	June 1876
40000	Cedar Creek, c, California*	8 0 0	—	—	0 10 6	0 3 0	Aug. 1876
35000	Cesena Sul. Co., Romanga, Italy†	10 0 0	—	—	0 13 6	0 4 0	Nov. 1876
18000	Chicago, c, Utah*	10 0 0	—	—	7 11 5	0 3 0	May 1876
68000	Colorado United, t, Colorado†	8 0 0	—	—	3 8 9	0 2 0	Mar. 1876
16000	Copago, c, Chile† (250 shares)	18 16 0	—	—	0 14 0	0 2 0	July 1876
100000	Don Pedro North del Rey†	0 16 0	—	—	17 3 10	0 6 8	Oct. 1876
28500	Eberhardt & Aurora, c, Nevada†	10 0 0	—	—	1 11 0	0 1 0	July 1876
70000	English & Australian, c, St. Aust.	2 10 0	—	—	0 4 0	0 4 0	Dec. 1876
80000	Flagstaff, c, Utah*	10 0 0	—	—	6 14 10	0 8 0	Oct. 1876
25000	Fortuna, t, Spain†	2 0 0	—	—	0 1 0	0 1 0	June 1876
58000	Frontino & Bolivia, c, New Gran†	2 0 0	—	—	0 2 4	0 4 0	Oct. 1876
80000	Gold Run, t, t, Australia†	1 0 0	—	—	0 14 0	0 2 0	Nov. 1876
88000	Kapunda Mining Co. Australia†	1 3 0	—	—	0 14 0	0 2 0	July 1876
90000	Last Chance, t, Utah*	8 0 0	—	—	0 14 0	0 2 0	July 1876
18000	Linares, t, Spain†	3 0 0	—	—	0 14 0	0 2 0	July 1876
65000	London and Australia, c, t	2 0 0	—	—	0 14 0	0 2 0	July 1876
7837	Lusitania, Portugal† (25 sh.)	3 10 0	—	—	0 4 0	0 4 0	Dec. 1876
5000	Mamm Copperopolis of Utah, c, t	10 0 0	—	—	0 4 0	0 4 0	Dec. 1876
5000	Mountain Chief, c, Utah*	10 0 0	—	—	23 1 1	11 1 0	Nov. 1876
10000	Pontbiquet, t, France†	20 0 0	—	—	1 9 0	0 1 0	Sept. 1876
100000	Port Phillip, c, Clunes†	1 0 0	—	—	3 9 0	0 7 8	Oct. 1876
54000	Richmond Consols, t, Nevada†	8 0 0	—	—	0 3 9	0 3 0	May 1876
40000	Santa Barbara, t, Brazil	0 10 0	—	—	15 per cent.		June 1876
120000	Scottish Australian Mining Co.†	1 0 0	—	—	1 18 0	0 2 0	Oct. 1876
80000	Scottish Austral. Mining Co., New	0 8 0	—	—	0 14 2	0 2 0	Nov. 1876
112500	Sierra Buttes, c, California†	3 0 0	—	—	0 11 6	0 8 0	Oct. 1876
60000	St. John del Rey† (25 stock & multiples dealt in)	325 335	—	—	0 11 6	0 8 0	Oct. 1876
225000	St. John del Rey† (25 stock & multiples dealt in)	325 335	—	—	12 per cent.		July 1876
20000	Tejano, t, So. America	5 0 0	—	—	1 4 0	0 8 0	April 1877
25000	Victoria (London), t, Australia	1 0 0	—	—			
18000	Western Andes, t, New Granada	8 0 0	—	—			
31000	W. Prussia (5500 pref. sh. 101 pd.)	10 0 0	—	—			

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Shares.	Mines.	Paid.	Last wk.	Clos. pr.	Last pd.
5000	Anguilla Phosphate, West Indies (4000 issued)	10 0 0	—	—	—
12000	Argentine, c, Argentine Republic	8 0 0	—	—	—
3000	Bellavista, t, Peru† (210 shares)	10 0 0	—	—	—
80000	Blue Tent, c, California†	2 0 0	—	—	—
49935	Chontales, t, Nicaragua†	2 0 0	—	—	—
18000	Condes de Chili, t, t	5 0 0	—	—	—
30000	Elizaur Australian, t, Victoria*	0 10 0	—	—	—
85000	Excoisor Hydraulic Gold Washing Co., California*	6 0 0	—	—	—
100000	Excoisor, t, c, California†	1 0 0	—	—	—
80000	Holcombe Valley, t, c, California†	1 0 0	—	—	—
8000	Hornos, t, t, Spain	10 0 0	—	—	—
12000	Huitafall, t, t, Orebro, Sweden	5 0 0	—	—	—
2 000	Imperial Brazilian Collieries, Brazil†	8 0 0	—	—	—
10 000	J. L., t, c, California†	1 0 0	—	—	—
50000	Javali, t, Nicaragua†	2 0 0	—	—	—
8500	La Mancha, t, Newfoundland	10 0 0	—	—	—
120 00	Laneston, t, t, Viscaya, Spain (22 shares)	1 18 0	—	—	—
75 000	Malabar, c, Colombia* (67185 issued)	1 0 0	—	—	—
40000	Malpas, c, Colombia* (7400 pref. shares, fully paid)	1 0 0	—	—	—
12000	Meissenberg, c, Honnet, Germany*	8 0 0	—	—	—
4588	New Bensberg, t, t, Germany*	8 0 0	—	—	—
65000	New Quebrada, c, Venezuela†	5 0 0	—	—	—
2000	New Zealand Kapanza, c, Coromandel†	5 0 0	—	—	—
8000	Oregon, t, Oregon, U.S. (preference shares)	4 0 0	—	—	—
5000	Panuelillo, c, Chile† (250000 debentures)	4 0 0	—	—	—
50000	Providencia and New Rosario, c, Mexico*	1 0 0	—	—	—
50000	Rica, c, Colombia* (40000 issued)	1 0 0	—	—	—
52 151	Rio Tinto, t, t, Spain	58 1/2	—	—	—
100000	Rosa Copper, t, Brazil† (21 shares)	0 19 0	—	—	—
30000	Russia Copper, t, Orenburg and Ufa†	10 0 0	—	—	—
25000	San Pedro, c, Chile†	2 0 0	—	—	—
10000	Silver Plume, c, Colorado*	2 0 0	—	—	—
80000	Teoma, t, Utah*	10 0 0	—	—	—
80000	Thornhill Reef, t, Australia*	1 0 0	—	—	—
43174	United Mexican, t, Mexico†	28 15 3	—	—	—
18000	Yan, t, t, Utah*	5 0 0	—	—	—
18000	Yorke Peninsula, c, South Australia	1 0 0	—	—	—
40000	Yorke Peninsula, c, South Australia	1 0 0	—	—	—

* Have made calls since last dividend was paid.

FOREIGN AND MISCELLANEOUS STOCKS, BONDS, LOANS, AND TRUSTS.

Closing Prices.	Closing Prices.
Argentine, 1868, 5 per cent.	57 69
Bolivia, 6 per cent.	25 1/4
Brazilian, 1865, 5 per cent.	95 95
Chilian, 1865, 7 per cent.	100 103
City of Providence, 5 p.c. coupon bonds	98 100
Egyptian, 5 per cent. pref.	57 1/4 58 1/2
Do., unified debt, scrip	32 1/2 33 1/2
Do., 7 per cent., V.M.L.	64 66
Do., 9 per cent. guar.	73 75
Do., 7 per cent., K.M.L.	41 48
Foreign and Col. Gov. Trust, 5 p.c. t.	55 70
Do., 5 per cent., 2d issue	52 57
Do., 6 per cent., 3d issue	53 58
Do., 1872, 4th issue	45 50
Do., 1872, 5th issue	46 51
Peruvian, 1870, 6 per cent.	13 1/4 14
Do., 1872, 5 per cent.	11 1/2 1 1/4
Russian, 5 1/2 per cent. L. Mort.	61 69
Spanish, Quicksilver Mort., 5 p.c.	95 97
United States Mort., 6 per cent.	95 98

NON-DIVIDEND MINES.

Shares.	Mines.	Paid.	Last wk.	Clos. pr.
40000	Aberdun, t, t, Llanidloes*	1 0 0	—	—
10000	Aberystwith, t, t, Cardigan	8 0 0	—	—